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ASR

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AMERICAN SOCIOLOGICAL REVIEW • VOLUME 55 • NUMBER 1 • FEBRUARY 1990

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Joan Huber

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Jill Quadagno

From an Autonomous to a Captured State Agency
Gregory Hooks

Class, Culture, and Campaigns Against Vice
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THREE CROSS-NATIONAL COMPARISONS

Disarticulation and Human Welfare in Less Developed Countries
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Ross M. Stolzenberg

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Elder, Glen H. 1975. "Age Differentiation and the Life Course." Pp. 165-90 in *Annual Review of Sociology*, vol. 1, edited by A. Inkeles, J. Coleman, and N. Smelser. Palo Alto, CA: Annual Reviews.
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ON SPECIAL ISSUES AND REVIEWER SELECTION

Editor's Comment

I thought it was a terrific idea. The current ferment in the Communist world is surely one of the most important events of the 20th Century. Social movements is an area of central concern to a substantial number of sociologists (including me). Wouldn't a set of articles titled "Revolution in (Poland, Czechoslovakia, Estonia, China, etc.): Lessons for Sociology," make a great journal issue?

This is not the first suggestion I have received for a special issue in *ASR*. Almost as soon as I became Editor, individuals from two different substantive areas made independent requests. They complained that *ASR* had been unsympathetic to "their kind of sociology," and that a special issue was the only sure way to remedy the situation.

So far, my own appraisal is that neither their diagnosis nor their proposed cure is appropriate. Like my predecessors, I think that a major reason I was selected to edit *ASR* is that I tend to appreciate most kinds of sociology. Surely I am not perfect, but *ASR* has an elaborate process to protect authors from at least global area or method prejudice on my part. I have had to look through many manuscript files begun by my predecessor, and I find it difficult to sustain the complaints of specific areas regarding his editorial decisions. In my judgement, he bent over backwards to give those areas both sympathetic consideration and assistance in revising manuscripts.

But perhaps it is the selection of reviewers that prejudices the process? In both the previous and the current editorial regimes, the Deputy Editors have been responsible for assigning all reviewers. The Deputy Editors have varied scholarly histories, preferences and, yes, prejudices. However, they generally make reviewer assignments in areas with which they are most familiar, and about which they tend to be positive. In any case, they are usually so desperate to find appropriate, skilled and conscientious reviewers that they do not have enough degrees of freedom to be able to choose individuals whose prejudices they know.

In fact, they could use some help. When you

submit a paper, please suggest several possible reviewers. To be most useful, describe their areas of expertise. Of course, the people you recommend should be neither your close friends, nor your colleagues, nor your collaborators, nor persons who have helped with your paper. You could also tell us who might be unreasonably negative to your kind of work. We may not follow your suggestions, but more information is generally preferable to less, and we can use as many names as possible of people who would do a good job reviewing in your area. You can help shape our list of reviewers so that it is appropriate for your kind of work.

Even if the review process were discriminatory, I think that special issues would be a dangerous and costly remedy. *ASR* should be a journal that publishes the best papers available, regardless of topic or research style. It is important that readers know that when a paper is published in *ASR* it is not because of politics or fashion, but because a reasonable, fair, and rigorous peer review process has selected it on the basis of quality. Perhaps more importantly, authors must be confident that publication in *ASR* declares that a paper has gone through such a process. Authors choose to submit to *ASR* first because of its reputation for quality, and *ASR* is therefore privileged to publish the best.

Another problem with special issues is that they can reify current divisions in the field. Areas that attract many sociologists, but do not produce vital and interesting new research and theory, could preempt some *ASR* pages from more active areas. Special issues could thereby institutionalize competition for space based on area rather than quality.

Other journals of sociology do use special issues, and for good reason. I think it is important that we let at least one journal do it the old-fashioned way. For now, I will let my excellent idea for a special issue sit on a back burner — and do the same with yours. Still, if anyone has written a good paper on the sociological meaning of recent events in the Communist bloc, please send it to *ASR*. The Editor would really like to read it.

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MACRO-MICRO LINKS IN GENDER STRATIFICATION*

1989 Presidential Address

JOAN HUBER
The Ohio State University

Since the study of macro and micro interrelations requires measurement of reciprocal effects over time, the problem is usually conceptualized more narrowly. This paper demonstrates how macro-micro links in a theory of gender stratification can put societal problems in context and show how these problems are reflected in individual lives. Industrialization disturbed gender stratification patterns when macrorends in mortality, education, fertility, labor force participation, and artificial infant feeding (which enabled a baby to survive separation from its mother) increased women's productivity compared to men's. But the same trends so increased the cost of children that population maintenance has become a problem in the West. Measures to stabilize fertility must spread childrearing costs more widely, thereby improving women's status.

The 1989 annual meeting of the American Sociological Association had, perhaps for the first time, two themes. One was the AIDS crisis, a health care nightmare which is now becoming a subject for sociological research. The other theme, and the topic of this address, concerns the interrelations of macro and micro theory and research. It is a broad theme, almost as broad as the discipline itself. There is good reason for such breadth.

The privilege of choosing a theme for the annual meeting increases the tendency for presidents to take themselves very very seriously. As Erving Goffman observed in the address that he was too sick to deliver in this room seven years ago, when presidents of scholarly associations take office, they find a podium attached. They are encouraged to demonstrate that they are indeed obsessed by what their election proved they were already known to be obsessed by and they are led to feel that what they represent is just what their intellectual community wants represented. Presenting their addresses, they come to feel like temporary guardians of the discipline. "However large or oddly shaped the hall, their self swells out to fill it" (Goffman 1983, p. 1).

Sobering. Thus, the macro-micro theme, which is broad enough to encompass almost everybody's favorite obsession.

The interrelationships of macro- and microlevel theory and data concern all social and behavioral sciences that study both individuals and collectivities like nations, firms, and large organizations. The basic problem is to explain how persons affect collectivities and how collectivities affect persons over time. However, to conceptualize and measure reciprocal effects over time is a formidable undertaking. We are only at the beginning of the beginning of this task (Campbell 1983). In practice, most scholars conceptualize the problem only along one direction, from micro to macro or from macro to micro, the approach of this paper.

THE CONTEXT IN SOCIOLOGY

To set my remarks in context, I first briefly review the history of the problem in sociology. Few scholars debated macro and micro relations until the 1960s when Homans tried to reduce sociology to social behaviorism (Collins 1988a, p. 376). His attack on macrosociology was joined by interpretive sociologists who (with a few notable exceptions) tended not to share Homans' view of the requirements of scientific research. Their theories tended to be radically anti-collectivist (Alexander 1987, p. 54) and they were being attacked for failing to take social structure into account. The actor was not seen as bringing a previously defined collective order into play (Alexander 1988, p. 87). Much of the ensuing discussion was conducted

* I am grateful to William Form for suggesting this topic and for criticizing this paper.

by militant microsociologies as a war against macrosociology although they disagreed sharply over the type of microsociology to replace it (Collins 1988a, p. 386).

During most of this period, macrosociologists paid little attention to the controversy because, first, it seemed irrelevant. As Goffman (1974, p. 13) said, social organization and structure can be studied quite nicely without reference to social psychology. Macrotheory must account for patterns of social relations not on the basis of motives but on the basis of external constraints and opportunities for social relations created by population composition and the structure of positions in the social environment (Blau 1987, p. 75).

Second, the controversy was muddled by disagreement about the meaning of the words micro and macro. Everyone agreed that micro refers to something small. Beyond this, sociologists divided into two camps.

One camp included interpretive sociologists, who tended to equate macro with "quantitative" and micro with "qualitative" sociology. This definition puts their own work, based on individual data, in the micro category but it implicitly excludes other work based on individual data (status attainment, for example) when those data are collected with methods that involve a quantitative and qualitative mix like that of survey research. To my knowledge, no other social and behavioral science scholars so use these words. As Berger, Eyre, and Zelditch (forthcoming) point out, it is wrong to use micro to mean a small unstructured action system while macro refers to a large unstructured system without action. This treats the analytic aspects of micro- and macrotheories as being correlated when in fact they are independent and raises fruitless questions about relationships.

The other camp includes everyone else: macrosociologists, exchange theorists, life course theorists, and so on. Whatever else they disagree about, they tend to equate micro with individual- and macro with collective-level events, using the words much as economists do.

Some sociologists in this large residual category see the problem as one of showing how micro affects macro in a theoretically generalizing way (Collins 1988a, p. 244). For sociologists, the natural unit of observation has been the individual. Thus, the analysis must move from the individual level of observation to the system level where the problem of interest

usually lies (Coleman 1987, p. 153). But how to move remains an unsolved problem that requires the integration of exchange theory and macrostructure (Blau 1987, p. 84). The extent to which the problem is solvable remains to be seen.

Other sociologists have taken a macro-to-micro approach. One fruitful example is the life course perspective. It mixes history, social psychology, and demography with powerful quantitative techniques that can now handle both the timing and sequencing of events (Blalock 1989). Life course theorists examine cohort and period effects on individuals with data taken from historical demography, social history, and recent longitudinal studies (Elder 1984). These studies necessarily focus only on the industrial era because they require data that can be analyzed quantitatively.

Like the life course theorists, I, too, am concerned with macro-to-micro effects — but not just in the industrial era. Since 1970, my favorite obsession has been gender stratification, how women's power and prestige relative to men's varies by time and place. The only way to develop an adequate theory is to compare the impact of ecological conditions and subsistence technologies on social organization and individual behavior over time. Only a theory that takes both preindustrial and industrial technology into account can put into context concrete problems that U.S. society faces today and demonstrate how these problems are reflected in individual lives.

PERIOD EFFECTS ON A 1967 COHORT

The events that I experienced led me to conclude that the macro-micro link is best approached as a substantive problem using comparative and historical data—which make sense only in the context of a general theory. I begin by describing the direction in which my work was shoved by period effects on the 1967 crop of Ph.D.s.

Entering graduate school in the 1960s, I chose sociology because it examined societal constraints on individual behavior. Perhaps I wanted to know why I had been a housewife for 14 years when I liked books better than housework. I saw stratification as the heart of sociology. Duncan and Schnore's (1959) POET model (population, organization, ecology and technology) included the variables with the most power to explain stratification comparatively and his-

torically.¹

By 1970, the black power movement and a new wave of the women's movement signalled that something had gone awry in stratification theory. Women and blacks were nearly invisible in it. In introductory sociology texts, women appeared primarily as mothers or prostitutes.² Blacks appeared in a chapter euphemistically entitled "Race Relations," as if racial interaction were symmetrical.

In response to these gaps in stratification theory, the concepts of institutional racism and sexism appeared, highlighting the ascriptive qualities of race and sex in contrast to those of class, which at least offered chances for mobility. Also, it now seems clear, especially since Karen Mason (1984) pointed it out, that class and SES vary among individuals in all settings but gender stratification in a particular setting is a constant across individuals regardless of their economic status. But neither Marx nor Weber had said much about race and sex. What to do?

My response was triggered by a question that popped up at a college curriculum committee meeting in Urbana in 1972. I was earnestly defending the merits of women's studies courses when a learned linguist airily waved his hand and declared that women's studies was only a passing fad. The women's movement wouldn't last. I was shocked. But I had to ask, would it or wouldn't it? Why or why not? The basic theoretical question was, of course, what factors shape stratification patterns and what makes these patterns change?

The answers appeared piecemeal in the course of teaching introductory sociology and sex stratification. In 1972 I first used Lenski's (1970) text. It was based on his 1966 analysis that showed how the distribution of power and prestige was affected by use of a particular subsistence tool. His account, which covered all human societal types, gave theoretical underpinning to core sociological concepts by showing how ecology and technology affect stratification. The ecological evolutionary approach emphasizes strategy selection, which puts the study of production and expropriation in a new light. The approach assumes that persons (who enact strategies) are the units of behavior but it

permits analysis of populations in terms of strategy differences without erroneously inferring system-level behavioral dynamics from individual traits (Cohen and Machalek 1988).

A given ecology and technology permit a range of outcomes, limiting the ways that humans can organize themselves. Such factors as rainfall and temperature coupled with the use of a particular major subsistence tool affect the division of labor which, in turn, affects social organization and stratification. One could thus present Joseph in Egypt as a world-class bureaucrat. His management skills were called into being by the invention of the plow, which created a food surplus so large that writing and counting had to be invented to keep track of it.

The ecological evolutionary context was a fine fit for my race lectures, based on van den Berghe's (1967) analysis of the confluence of ideational and technological factors that drove racism to historically unprecedented peaks of virulence in the nineteenth century: A wrong-headed interpretation of Darwinian theory — the notion that people in technologically-advanced societies were more fit than others — was used to justify the exploitation of people in horticultural and herding societies all over the world. I also leaned on Fustfeld's (1973) account of the way that technological trends had affected black employment rates in the United States.

But sex stratification remained a puzzle. The first course I taught was more descriptive than theoretical, except for the part based on Oppenheimer's (1973) account of long-run effects of economic demand on women's entering the labor force. Actually, the literature on women's employment during the nineteenth and twentieth centuries was not the problem. Although skimpy, there was enough to suggest how the current women's movement paralleled what I came to call the men's movement.

In the West, both movements represented a response to men's and women's massive entry into the wage labor force. The men's movement emerged during the nineteenth century. Male workers, erstwhile peasants, serfs, and slaves, began to fight collectively for what they saw as their fair share. The current wave of the women's movement similarly emerged when women workers, erstwhile housewives, began to struggle for what they had come to see as their fair market share. The men's movement is called "the labor movement" but this is misleading. Women played almost no part in it.

¹ See Namboodiri (1988) for a cogent statement on the importance of ecology in social research.

² The degree of change since that time is less than one might hope (Ferree and Hall 1989).

Indeed, one of the movement's objectives was to restrict the number of hours women could work for pay in order to give them more time at home to care for children. Such measures knocked women off the seniority ladder, thereby decreasing their ability to compete for high-wage jobs.

If the labor force literature was fairly satisfactory for theory, the fertility literature presented a real stumbling block. Demographers, suffering a terrible case of period effects, offered little help. As Ryder (1979, p. 359) put it, the baby boom had badly dented their theory of the demographic transition and they had retreated into the empty safety of empiricism.³

Help came, instead, from economics and anthropology. Economist Ester Boserup (1970) was first to link polygyny and women's productivity on a comparative basis (Lesthaeghe and Surkyn 1988b), demonstrating that women's ability to support themselves and their children was a critical factor in sub-Saharan polygyny. To my knowledge, anthropologist Ernestine Friedl (1975) was first to link work, fertility, and sex stratification in foraging and hoe cultures, thereby showing what factors caused variation in the gender distribution of power and prestige. Anthropologist Jack Goody (1976) extended Boserup's research, showing that property transmission is decisive in socioeconomic systems (Lesthaeghe and Surkyn 1988b), which suggested why gender stratification in plow societies differed so sharply from that of foraging or hoe cultures. Then Rae Blumberg (1978) put the approach into the Lenski (1970) ecological evolutionary context, which highlighted gender stratification variables across all societal types.

A MACROTHEORY OF GENDER STRATIFICATION

I summarize a general theory that has emerged from such research in order to show how it applies to a cluster of macro (social) and micro (personal) problems that men and women face today. The theory is not well known in either social science or women's studies.⁴ It has there-

fore not received the kind of criticism it needs.

As Friedl (1975) suggested, the basic questions are: Why do men and women do certain tasks, and which ones yield the most prestige and power? The answers suggest two principles of sex stratification which Friedl applied to foraging and hoe cultures. I then use these principles to relate production, reproduction, and stratification in societies based on herding, plow, and industrial technology (see Huber and Spitze 1988).

The first principle applies to the family. Producers in the family economy have more power and prestige than consumers. Historically, women's work has been constrained to mesh with pregnancy and lactation lest the society fail to reproduce itself and die out.

The second principle applies to the society. The most power and prestige accrue to those who control the distribution of valued goods beyond the family (Friedl 1975). Few men attain such positions. Almost no women have done so.

In foraging societies, men hunted the animals that were large enough to be distributed and consumed beyond the nuclear family. Women never hunted large animals because spending an uncertain period of time away from camp made nursing impossible. Since younger women were constantly pregnant or lactating to offset high death rates, the need to maintain population thus immobilized women, thereby excluding them from the most productive work.

In hoe cultures, men monopolized land clearing and, after the invention of metallurgy, warfare. Since warfare brings in more surplus than does landclearing, men outrank women more in advanced than in simple hoe cultures. But in both types women's food production equals men's on average because the hoe is used near home. Since divorce has little effect on the subsistence of either of the spouses or their children, divorce rates are high, higher than in our own society (Friedl 1975). Women's ability to support themselves permits what Spitze and I (1988, p. 488) have called "populist polygyny." Nearly everyone marries. Since women marry young, men marry old, and the death rate is high (as in sub-Saharan Africa), the sex-ratio paradox tends to be resolved.

In herding societies, low rainfall, a short season, or mountains preclude growing crops. The need for water and grazing land makes war a major means of subsistence, enabling elites to control both economy and polity. Women lack

³ Demographers are becoming more theoretical. See, for example, Smith's (1989) suggestions for integrating theory and research on institutional determinants of fertility.

⁴ "Feminist theory" tends to be an idealist enterprise that takes little heed of organization, population, ecology and technology.

access to major subsistence tools; warfare and herding are conducted far from home. These conditions permit what Spitze and I (1988, p. 428) have called "elite polygyny." A few rich men have many wives while some poor men have none.

Desert conditions similarly affect baboon social organization (Collins 1988b, p. 38). In arid lands where food is scarce and exposure to predators extreme, Hamadrayas baboons organize along military lines. Males dominate. Among Hamadrayas in forests where food is plentiful and trees offer protection from predators, males are not dominant and females mate promiscuously. Thus, the environment rather than genetics seems to evoke different social patterns.

In Eurasia, the iron-shared plow vastly increased the food supply but depressed the status of ordinary people. Iron weapons enabled elites to extract heavily from peasants (Lenski 1970, p. 177). Women's share of food production decreased relative to that in hoe cultures. Larger fields further from home impede nursing (Blumberg 1978). The plow's effect on inheritance patterns also degraded women (Goody 1976). The plow makes land the chief form of wealth. Since land tends to be an impartible inheritance, the number of legal heirs must be limited. Monogamy prevails. Divorce is rare. Women's sexual behavior must be constrained lest a man's property go to another man's child. The richer her family, the greater the constraints placed on her — footbinding in China, suttee in India.

Industrialization first emerged in northwest European plow kingdoms. Men continued to use the most productive tools, which ensured that their wages would exceed women's. Other macrorends disrupted patterns adapted to plow cultures. Five trends that occurred in sequence were most disruptive.

First, infant mortality declined. This trend greatly reduced the number of births needed for population replacement.

Second, the spread of mass education redirected wealth flows within the family (Caldwell 1976). For the first time in history, economic returns on parental investment in children went to the children, making them a less attractive pension instrument (Parsons 1984). In the West, economic incentives to reproduce have vanished like the snows of yesteryear.

Third, spurred by the decline in infant mortality, the spread of mass education (compulsory in Europe by about 1880), and rapid eco-

nomic growth between 1860 and 1910, fertility began its long decline in the West. Economic growth triggers demographic change by fueling ambition and opening opportunities (Lesthaeghe 1983).

Fourth, about 1910 the introduction of safe methods of artificial feeding wiped out the survival advantages of breastfed babies. For the first time in human history a mother could work away from her baby without endangering its life.⁵

Fifth, after the preceding four changes were well along, an increase in the demand for women workers induced a steady rise in women's labor force participation in this century, helping to launch a new women's movement. Increases in economic demand trigger social movements by producing a demand for labor that cannot be met in the usual ways (Chafetz 1984; Chafetz and Dworkin 1986).

MICROCONSEQUENCES OF MACROCHANGES

Taking a long view, these macrolevel changes soon transformed social patterns adapted to plow cultures into patterns better adapted to industrial work. Pervasive mass media allow for rapid value change and great homogeneity of values (Preston 1986, p. 178; Lesthaeghe and Surkyn 1988a). Friedl's (1975) two principles of stratification permit theoretical interpretation of the new and emerging patterns.

The first principle is that producers outrank consumers. Compared to men, women are more productive now than in plow societies. Early industrialization increased the U.S. female/male wage ratio by almost 50 percent. By 1885, it reached the 1970 value of about .56 (Goldin 1987, p. 214). Since 1970, the wage ratio again increased because, unlike the 1950s, women who are more educated are now more likely to be employed than are less educated women.

⁵ The relation of breastfeeding to fertility, infant death, and women's work during industrialization has received little study. A skimpy literature suggests that the need for women's wages may curtail breastfeeding and thereby affect fertility and infant mortality. Strong evidence suggests that European fertility rose before 1880 because of a shortened period of nursing (Dyson and Murphy 1985). Infant mortality may have risen because of maternal factory work and unsafe bottle feeding (Hogan and Kertzer 1986). Sussman (1982) reports the grim consequences of French wetnursing practices at that time.

The sex wage gap may nearly close for younger workers by century's end (Smith and Ward 1985).

As expected, women's increased productivity has eroded legal and customary restraints on their behavior. For example, marriage as an institution has declined since 1960⁶ as indicated by postponement, fewer persons ever marrying, a lower ratio of time spent in wedlock, and shorter marital durations (Espenshade 1985).⁷ Recent divorce rates imply that two-thirds of all first marriages may dissolve (Martin and Bumpass 1989). Divorce rates reflect spouses' ability to support themselves (Brinton 1983) although women's post-divorce income is less than 70 percent of its pre-divorce level (Stirling 1989).

The second principle is that the most power goes to those who control the distribution of valued goods beyond the family. In a modern context this refers to elite positions in economy and polity. Few women hold such positions. Women still are hindered by behaviors and expectations related to fertility.

Feminist scholars have tended to focus on these expectations and behaviors while ignoring basic trends in fertility, apparently seeing it as a benign constant rather than a variable. This is understandable considering the problems posed by rapid population growth in the Third World but it is an error nonetheless. It makes for myopic theories about women's status, as I point out below.

The major fertility-related expectation that restricts women is that of childrearing, which lowers occupational aspirations. The obverse is that people expect grown men but not grown women to work for pay. Only 12 percent of the respondents to a 1978 national survey thought a mother with school-age children should be employed; only a third thought a married woman, even if she had no children, should work for pay (Huber and Spitze 1983). Such

expectations hinder women, for example, by making family migration largely unresponsive to the wife's work (Spitze 1986). Belief in a differential obligation to work for pay may be the aspect of women's work most resistant to change (Spitze 1988).

The major fertility-related behaviors that disadvantage women involve time spent in housework and childcare. Women in the 1980s do less housework than in the 1960s and men do a little more, but men still do much less than women (Gershuny and Robinson 1988).

Fertility-related expectations and behaviors are in flux. Continuing macrorends in education, employment, and fertility churn the microlevel relentlessly, leaving in their wake vast discrepancies in thought, feeling, and behavior. Such microlevel discrepancies were the object of Hochschild's (1989) recent study of the second shift in two-job marriages. A complex interplay of gender ideology, feeling, and behavior determines the division of labor. The supply of male commitment to share child care was far lower than female demand for it, making for high levels of marital tension. Such tension may spread since less educated women have begun to catch up with college women in adopting a feminist stance toward a gendered division of labor (Mason and Lu 1988).

In contrast to behaviors and expectations, actual fertility trends are in less flux. Except for the period of the baby boom, U.S. fertility has been declining for 200 years.⁸ Will it level out at zero population growth or go on down (Huber 1980)? If down, how far, how fast? Demographers don't know. The West may be experiencing a population implosion (Bourgeois-Pichat 1987). Childlessness is up (Jacobson, Heaton, and Taylor 1989). Marriage is down. Trends set in motion by the Industrial Revolution have put us into a new game.

From a macrolevel perspective, immigration could improve demographic stability. At the microlevel, however, the issues posed by large-scale immigration would be divisive. Public concern with a growing immigrant community would increase as its share of total population growth rose. Many writers doubt there can be a

⁶ Even the health benefits of marriage have been questioned. Much excess mortality among the never-married results from selectivity. Poor health deters some persons from marrying (Kisker and Goldman 1987).

⁷ Divorce has decreased marital duration in this century but not as much as death did in the last century. Current U.S. mortality rates permit average marital durations of 45 years; the real average is 27 years (Watkins, Bongaarts, and Menken 1987). In contrast, nineteenth century French marriages averaged 20 years (Tabah 1980).

⁸ Below-replacement fertility has had a surprisingly long history in the United States (Sanderson 1987). A new study also reports that the sharp drop in black fertility in the rural South from 1880-1940 resulted from voluntary measures rather than from disease or poor nutrition (Tolnay 1987).

politically acceptable immigration solution to allay fears of population decline (Espenshade 1986, p. 258). Thus, the demographic situation suggests three sources of political concern.

POLITICAL CONCERNS

One is the vague fear that the human race might die out. The dinosaurs did. Why not us? Second, some pollsters and politicians worry that the nation is losing its will to live, especially its ability to conduct a really decent war. A third concern is with the funding of pension plans as the proportion of workers declines.

These political concerns will tend to reawaken interest in fertility and the problems posed by population decline. Such problems are not new. About a century ago, many northwest European countries, concerned about population decline, instituted programs to make childrearing more attractive. Typically such programs awarded modest grants to induce women to stay home and have babies. No one ever demonstrated the effectiveness of such programs. They would cost even more today because the proportion of educated women is larger and the loss of women's market productivity would be greater.

If the old approaches to the problem of population maintenance seem doubtful, what new ones might work? I briefly note three possibilities. All would significantly affect gender stratification.

One type would require a national state more coercive than any yet seen. The trends that lowered fertility would have to be reversed. By far the most important would be to limit women's education, say, to the completion of tenth grade, in order to reduce their ability to compete for high-wage jobs. However, the number of educated women is probably already too high to make such a measure politically feasible. Someone is sure to suggest outlawing contraceptive devices but such measures would probably be ineffective for the long run. In the West, the demographic transition occurred without fancy gadgets. People who don't want children figure out what to do.

A second approach would reconnect fertility and retirement security by allocating benefits entirely or partly on the basis of worker contribution to childrearing (Demeny 1987). This would shift responsibility for a macroproblem to the microlevel. Although the yuppie generation might find this solution radical, it is quite

traditional, having served the human race from its beginnings. Currently, the persons who foot the bill for rearing the next generation of workers are in effect giving a free ride to those who for whatever reason do not share those expenses.

A third approach would spread costs over the body politic by making parenthood more attractive to persons who want to remain in the labor force. A basic problem with childrearing is that paid work and leisure are increasingly more attractive. Parents are on call 24 hours a day, perhaps one reason that children decrease marital satisfaction (McLanahan and Adams 1987). Parenting might be more acceptable if better day care and more attractive nursery schools professionalized motherhood as medicine now is. Only 50 years ago, physicians were also on call 24 hours a day (Keyfitz 1986).

The disadvantage of such a program is its cost. The taxpayers would have to be committed to the idea that population maintenance is extremely important because programs to improve childcare would benefit the children of the rich and poor alike. Historically, measures to benefit poor people have never been popular. Recently, measures to improve children's economic status have been swamped by successful efforts to improve the status of the aged, particularly those in middle-income groups (Preston 1984; Wilson, 1987). However, since poor mothers typically rear a large share of the next generation of workers (Blake 1985), programs that improve early childcare and education could potentially provide high returns on the investment. Improvements in what economists call child quality could increase the potential for macroeconomic growth.⁹

Politically, the third approach seems most probable. No one seems to want women out of the labor force. Both men and women like the money that women earn. In turn, measures that make parenting more attractive would also improve women's market position. The more women's economic status resembles men's, the fewer the differences in men's and women's

⁹ It may be costly in the long run to ignore the effects of the mother's employment status and working conditions on child outcomes. Data recently gathered from the grown children of mothers first interviewed in 1967 permit the estimation of such outcomes for poor children, whose mothers were oversampled. The analyses suggest that the mother's working conditions affect such outcomes as verbal intelligence (Menaghan and Parcel 1989; Parcel and Menaghan 1989).

power and prestige. Thus, the more that voters become concerned about low fertility, the better it will be for women. For the first time in human history, technology has made it possible for women's economic productivity to equal men's. Whether this possibility will ever be realized remains to be seen. In agricultural societies, women's reproductive capacity was the basis of their subordination. In industrial societies, their reproductive capacity may be the basis for their social equality.

CONCLUSIONS

In this paper I have tried to demonstrate how a macrotheoretical and historical approach to gender stratification illuminates (in a way that the micro-macro approach does not) how a series of macrolevel trends during industrialization relate to one another and to people's trials and triumphs at the microlevel. Thus, the abortion issue, child care, rising divorce rates, social security financing, immigration, and tax schedules are linked in the context of an historical theory. Individual family members who confront these problems reflect evolutionary social changes in a microcosmic snapshot.

Thus, changes in rates of social behavior have resulted from a variety of macrotrends. These rate changes typically reflect individual decisions in small groups like the family, personal dilemmas like abortion, conjugal conflicts over the division of household labor, and prejudices such as men's barring women from a work group. Macrotrends are internalized as personal problems. The causal sequence is clear. Yet once personal decisions are multiplied over a large population and stabilized (as in the desire for fewer children) collective problems emerge: how to sustain economic growth, how to provide for retirement pensions, how to provide personnel for the armed forces.

Clearly, the evolutionary perspective discussed here is strongest in explaining the origin, persistence, and interrelations of problems in gender stratification. This is an impressive achievement. But the approach offers few guidelines to explain and predict the short-term direction of social change. Nor does it explain why individuals select some choices over others. This is a challenge that structural theories must confront. At this stage in the development of sociology, the best short-term strategy is to press the micro-macro link for all it is worth to see how much structure and change it

can explain and to push the macro-micro link for all it is worth to determine how well it can explain short-term change. Meanwhile, we need to gear up to confront the formidable task of explaining reciprocal effects over time.

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RACE, CLASS, AND GENDER IN THE U.S. WELFARE STATE: NIXON'S FAILED FAMILY ASSISTANCE PLAN*

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The central arguments about the formation of the U.S. welfare state view it as a product of class struggle driven by conflicts between labor and capital over problems of production. The emphasis on class struggle as the central dynamic has led class analyses to ignore a defining feature of social provision: its organization around race and gender. This historical case study of Richard Nixon's proposal for a Family Assistance Plan (FAP) to provide a guaranteed annual income to the working poor demonstrates that welfare programs not only mediate relations between classes but between politically dominant and politically repressed groups. By subsidizing the low-wage labor of black males and the childbearing role of black females, the FAP would reinstate male dominance over women in the household and retain white dominance over blacks in the labor market. The analysis suggests that while social policy may be used to increase female dependence, under certain historical conditions (in this case, those that existed in the South) social policy may enhance gender and racial equality. If economic power gained through redistributive measures from the state creates political opportunities for the excluded, then social policy becomes a liberating force.

In 1969, President Richard Nixon proposed abolishing Aid to Families with Dependent Children (AFDC), a means-tested welfare program for poor women and children, and replacing it with a guaranteed annual income for poor working families with children under 18. The unique feature of Nixon's Family Assistance Plan (FAP) was that it was designed to stimulate work through market incentives, rather than through compulsory work requirements. The guaranteed income took the form of a negative income tax (NIT), wherein a recipient could increase family income through additional work effort. Under FAP, the family benefit level was to be determined according to a formula: \$500

each for the first two members of the family, \$300 for each additional member, a \$720 annual earnings exemption, and a 50 percent marginal tax on nonexempt earnings. The marginal tax meant that as family earnings moved above \$720, the benefit would be reduced 50 cents for each dollar of nonexempt earnings until benefits reached zero and earnings were carrying the full load of family support. A family of four with no working members, i.e., a welfare family, would be guaranteed a minimum income of \$1600 a year, whereas a family of four with an employed household head could receive federal benefits until its income reached \$3,920.¹ On April 16, 1970, the FAP (H.R. 16311) passed the House by a margin of 243 to 155 and passage in the more liberal Senate seemed guaranteed. Yet the bill was never reported out of the Senate Finance Committee, and the Senate defeated a substantially revised proposal on October 4, 1972 by a vote of 52 to 34.

The FAP's defeat poses an intriguing historical puzzle. Explanations of reform efforts in the American welfare state have variously emphasized the critical roles played by leading frac-

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¹ Mildred and Claude Pepper Library, RG 309B, Box 56, File 7. "The Bill to Revamp the Welfare System," Legislative Analysis, American Enterprise Institute, April 6, 1970, Analysis No. 4.

tions of capital, state officials responding to civil disorder, and organized labor. In a context of mass turmoil, the FAP was designed and recommended by leading officials in the state bureaucracy, it had the support of big business and the endorsement of the labor movement, and yet it failed. Its failure suggests that existing explanations of U.S. social policymaking require modification.

I argue that the inability of existing theories of social policy to explain satisfactorily this counterfactual case rests on two problems. First is the shared assumption that social policy is shaped in a context of class struggle between capital and labor. The FAP's failure illustrates how conflicts based on gender and race also have a significant impact on the social policy agenda. A second problem is that the focus on successful social policies implies an historical inevitability that narrows the evaluation of causal factors. The analysis of social programs that become forgotten historical alternatives widens the range of explanatory potential. In a counterfactual case such as the FAP, the reasons why certain factions came to oppose the policy and what their opposition meant to its final outcome not only provide explanatory power lost in analyses of policy successes but also help to define policymaking limits.

CLASS STRUGGLE MODELS OF THE WELFARE STATE

The three dominant arguments about the formation of the U.S. welfare state have viewed it as a product of class struggle driven by conflict between labor and capital.

The Mass Turmoil Thesis

In Piven and Cloward's (1971, p. 3) classic formulation of the mass turmoil thesis, "when mass unemployment leads to outbreaks of turmoil, relief programs are ordinarily initiated or expanded to absorb and control enough of the unemployed to restore order; then as turbulence subsides, the relief system contracts, expelling those who are needed to populate the labor market."

In the mass turmoil thesis, the state is linked to the capitalist social order through welfare institutions, which serve two broad functions for capital — accumulation and legitimation. When a threat to the legitimacy of the state occurs, the state expands welfare institutions to

restore order and allow accumulation to continue (Isaac and Kelly 1981, pp. 1356-7). The implicit view of the policy formation process is that strong state managers with relative autonomy to shape social policy respond to pressures from otherwise powerless groups only when they threaten societal and state legitimacy. Thus, "the dynamic that periodically pushes the expansion of the state forward" is "class struggle between the agents of capital and labor, capital and the state, and labor and the state" (Isaac and Kelly 1982, p. 214).

The need to legitimate the existing social order may at times require ignoring the interests of some fraction of business, so that "some capitalist interests may be forgone or harmed in the short run" (Isaac and Kelly 1981, p. 1357). In the long run, however, the capitalist social order is preserved.

Elite Dominance

The elite dominance thesis represents a variant of what has come to be called instrumentalism. This view is rooted in statements by Marx characterizing the state as an instrument in the hands of capital. The state acts because it is directed to do so by representatives of the ruling class.

The elite dominance perspective has been modified along several themes. Block (1977, p. 10) suggests that capitalists are generally not aware of what is necessary to reproduce the social order. Because the continued power of state managers rests on the maintenance of political and economic order, they are forced to concern themselves with this function. In this sense, the state has a degree of autonomy from capital that is constrained primarily by the need of state managers to monitor "business confidence," which falls during political turmoil and rises when there is a restoration of order (Block 1977, p. 10, 16). Dependent upon the investment accumulation process, state managers will use whatever resources they possess to aid that process.

The class fraction argument represents a further specification of the elite dominance model. This thesis suggests that fractions within the capitalist class may have a different stake in any given policy proposal and that "the primary mediating function of the state takes place between divergent groups within the capitalist class" (Quadagno 1984, p. 646). For example, large monopoly corporations operating in inter-

national markets are often unconcerned with the labor supply issues that concern smaller businesses operating in highly competitive local markets (Quadagno 1984, p. 645). Because various fractions of capital have competing interests, the state is neither autonomous from capital nor a tool of it. Rather, the "state functions as a mediating body, weighing the priorities of various power blocs within it" and designing policies that reconstitute traditional power relations between classes (Quadagno 1984, p. 646).

The elite dominance perspective and the mass turmoil thesis share a view that power moves from the top down, with the working classes or masses the passive recipients of elite decisions. In both views, social programs are a product of class struggle and these programs invariably sustain the interests of a ruling elite.

Power Resource Theory

In contrast to the mass turmoil and elite dominance arguments, power resource theorists believe that under certain conditions the working classes can use the state as a vehicle to counteract the inequities of the market. Power mobilization occurs when collectivities that are relatively weak in terms of market resources use political resources to affect the outcome of market conflicts (Korpi 1989, p. 312). The ability of wage earners to initiate social programs that modify market forces depends on the degree to which working class parties make effective use of the franchise.

When wage earners are successful in organizing labor parties to represent their interests, they create "social democratic" welfare states. Social democratic welfare states are characterized by universal benefits that are granted as civil rights earned through worklife participation (Korpi 1989, p. 310). They emerge from strong labor movements, which create welfare states that decommodify wage workers by endowing "individuals with a relative independence of the cash nexus and work compulsion" (Esping-Anderson 1985, p. 224). The outcome is a more egalitarian society in which resources are redistributed more equitably and individuals gain the strength for communal action (Esping-Anderson 1985, p. 228).

When wage earners are unable effectively to mobilize political resources (generally because they fail to create a labor party), a "liberal" welfare state results (Stephens 1979, p. 148).

Liberal welfare states are dominated by "social assistance" policies characterized by strict entitlement rules, social stigma, and modest benefits. Social assistance supports the market by decreasing the security of the poor and forcing them to rely on their labor power (Esping-Anderson 1989, p. 25). The outcome is a class-political dualism with stratification based on the fragmentation of workers into universal and nonuniversal benefit recipients (Esping-Anderson 1989, p. 25).

Power resource theory's emphasis on the balance of power between capital and labor, usually used in comparative welfare state analysis, helps explain why the U.S. never achieved the advanced welfare state status of, say, Sweden. At first glance, this "negative" approach (it explains what didn't happen) appears less useful for understanding the evolution of welfare state development in liberal welfare states because it "defines things negatively and begs the question of what workers and other classes were doing ... and with what consequences" (Myles (1989, p. 4). But power resource theorists also argue that the coalitions that wage earners form within and between classes are the key to understanding differences in the creation of welfare states, an insight that moves theorizing beyond the weak labor/strong labor impasse. If successful political mobilization depends on the ability of wage earners to forge coalitions, then one impediment to class political mobilization may be the failure to form such alliances (Esping-Anderson and Friedland 1982, p. 38; Esping-Anderson 1989, p. 18).

What impedes or facilitates alliance formation? According to Hicks, Friedland, and Johnson (1978, p. 302-3), unionized and nonunionized fractions of the working class in the U.S. share similar class interests for three reasons. First, organized labor depends on the Democratic party, which requires the political mobilization of the nonunionized. Second, labor unions are interested in protecting the incomes of the nonunionized to raise the floor under the union wage. Finally, many of the nonunionized are ex-union members who are retired, disabled, or laid-off. The check on organized labor's ability to mobilize cross-class coalitions is either corporate power, which can exert a negative impact on redistributive measures, or conflict between the two segments of unionized workers — skilled and unskilled labor (Esping-Anderson 1989, p. 28).

The split labor market perspective suggests

that inherent conflict exists between three distinct groups: business or employers, high-paid labor, and cheap labor. The main goal of employers is to maintain a cheap labor force. Unionized labor is antagonistic toward low-wage workers because they pose a competitive threat. High-paid labor protects itself from cheap labor by monopolizing skilled positions, by preventing cheap labor from developing the skills necessary to compete with high-paid labor, and by denying it political resources (Bonacich 1972). Thus, unionized and nonunionized workers cannot form alliances because they are in a competitive market position.

In spite of their different views on how policy is formed and what policy outcomes are possible, all of the above arguments presume that the welfare state is a product of class struggle centering around problems of production.

GENDER AND RACE IN WELFARE STATE DYNAMICS

The emphasis on class struggle as the central dynamic of welfare state development has blinded class analyses to a defining feature of social provision: its organization around gender. The means-tested social assistance programs in the U.S. welfare state such as AFDC primarily support women, while the more generous, nonmeans-tested entitlement programs such as old age insurance allow men greater access to benefits and reward men more generously.² The differential distribution of the rewards received from entitlement programs reflects their eligibility rules. Although these rules are technically gender-neutral, they are modeled on male patterns of labor force participation. By rewarding continuous attachment to the labor force, long years of service, and high wages, these rules disadvantage women whose shorter and more irregular work histories make it more difficult for them to obtain full benefits (Quadagno 1988b, p. 542). In this sense, social insurance benefits merely replicate market inequities.

In contrast to social insurance programs, social assistance benefits are not earned but are based on both market and nonmarket factors. Social

assistance programs have a means-test (a labor control factor) and a family status requirement. Women are eligible for benefits as wives or widows, or as caretakers of children when they do not have a man who is able to provide support (Acker 1988, p. 491; Shaver 1983). Unlike "earned rights" guaranteed through worklife participation, benefits based on family status provide no guarantee of future income security—when family status changes, benefits are lost. Class-based theories of the welfare state cannot explain why women receive fewer benefits than men, nor can they explain why family status criteria govern access to social assistance.

Feminist theorists argue that welfare programs constitute a mechanism furthering women's subordination in the way they link income security with family structure and dependency relations. Eligibility rules for income support "reflect and reconstruct relations between men and women in terms of sexuality, marriage, fertility, parenthood and kinship" (Shaver 1989, p. 4). Welfare programs reinforce male dominance over women by maintaining the economic subordination of women (Shaver 1983, p. 146).

The mechanism through which male dominance is maintained is the "family wage," which is embodied in eligibility rules for benefits (Pascal 1986, p. 3). The family wage requirement presumes that "the nuclear family is the norm, that married and cohabiting women are supported financially by a male breadwinner, and that they are available to act as unpaid carers of those who are physically dependent" (Dale and Foster 1986, p. 105). Men receive benefits earned through their own market labor and any nonmarket labor performed by the dependent spouse. Women primarily receive benefits through their relationship to a male breadwinner and their benefits represent the lesser value of their nonmarket labor.

The problem with the family wage argument is that it is not at all apparent that welfare programs invariably reconstruct the male breadwinner/female caregiver family type. As Jensen (1986, p. 12) argues, "any analysis which is dependent upon assumptions about who does the housework, about family forms, and even about the characteristics of women's waged work can be no more than historically contingent." Assumptions about the family that are built into social programs are neither constant nor universal and thus require historical and comparative analysis.

² Women's average old age insurance benefits are about two-thirds of the male average (Estes, Gerard, and Clarke 1986, p. 546). Because of their lower wages, women who do receive unemployment benefits get less than men (Pearce 1986, p. 158).

Another problem is that while social benefits may maintain male dominance, they do not invariably increase women's dependence. They may also empower women by providing economic independence, "opening for women areas of autonomy, free from direct subordination to a man" (Acker 1988, p. 493). The question then becomes one of explaining the conditions under which female empowerment will occur. According to Ruggie (1984, p. 298), the extent to which social policies support women is a function of the relative power of organized labor and its relation to the state. When labor is able to implement an agenda of solidaristic social and economic policies, women benefit indirectly by becoming incorporated into the category of worker. Hernes (1987, pp. 21-3) contends, however, that gender-equal policies depend on the political empowerment of women and that public policies formulated and implemented by political bodies dominated by men are likely to ignore the consequences of political decisions for women. Because gender-equal policies involve the redistribution of status and social power, enactment depends on women becoming actors in the political process, not objects of policies made by men.

In the U.S., the distribution of social benefits is not only biased by gender, but also by race. This may reflect the inferior labor market status of blacks, a status that has been maintained both by the use of black workers to undercut high-paid labor and by organized labor's exclusion of blacks (Bonacich 1972, p. 554). Because of their concentration in low-wage, less secure industries, blacks are overrepresented in social assistance programs, particularly AFDC, where 40 percent of the beneficiaries are black women (Rodgers 1982, p. 74). Average old age insurance benefits are lower for blacks than for whites because benefits are tied to previous market earnings (Quadagno 1988a, p. 12).

While the overrepresentation of blacks in social assistance programs reflects their position in the economy, it also is a product of their political suppression by whites. Historically, the southern planter class' control over welfare helped them maintain economic and political dominance over a primarily black labor force of tenant farmers (Quadagno 1988a).

The disfranchisement of blacks allowed Southern Congressmen to impede and later to shape national welfare programs to confine blacks to locally-controlled public assistance programs (Quadagno 1988a, p. 116). For ex-

ample, the Social Security Act of 1935 excluded from coverage more than three-fifths of black workers (Quadagno 1984, p. 263). As a result, most blacks were eligible to receive old age benefits only from the means-tested, locally-controlled old age assistance program. Like gender equality, racial equality depends on blacks becoming actors in the political process, not objects of policy designed by whites.

Turning points in welfare history highlight the forces shaping social policy developments. This paper uses the FAP as an historical case study to examine prevailing theories of the welfare state. The next section evaluates how well the evidence supports a mass turmoil thesis, which predicts that urban riots provoke plans for welfare expansion from state managers.

MASS TURMOIL AND THE CRISIS OF THE BLACK FAMILY

When Richard Nixon sent his Family Assistance Plan to Congress, he stressed both the plan's ability to resolve a social crisis and to increase the labor supply: "We face an urban crisis, a social crisis - and at the same time, a crisis of confidence in the capacity of government to do its job." The FAP would open job training for those on welfare and expand day care facilities to "make it possible for mothers to take jobs by which they (could) support themselves and their children" (Nixon 1969, p. 674-76). In Nixon's view, AFDC had to be abolished because "any system which makes it more profitable for a man not to work than to work, or which encourages a man to desert his family rather than stay with his family is wrong and indefensible" (Nixon 1969, p. 675). Thus, the FAP was sold to the American public as a program to calm social unrest, increase the labor force participation of poor women, and discourage family breakup.

The Impact of Mass Turmoil

Nixon's proposal for welfare reform emerged during a period that could be considered a legitimization crisis for the state and for capital. Between 1964 and 1968, major riots causing destruction of property and deaths and injuries to rioters and police occurred in New York, Newark, Los Angeles, Philadelphia, Detroit, and numerous other cities. The summer of 1967 was particularly tumultuous with 64 disorders in the

first nine months of that year. Newspaper estimates of damage (which later turned out to be greatly exaggerated) ranged from \$200 million to \$500 million (National Advisory Commission on Civil Disorders 1968, p. 6).

Nearly all the riots centered around race — of the 31 cities where the proportion of blacks had doubled in the past twenty years, twenty had serious disorders (Piven and Cloward 1971, p. 259). The causes were "bitterness and resentment against society in general and white society in particular," as exclusion from employment and education had created "economic inequality reflected in the deprivation of ghetto life" (National Advisory Commission on Civil Disorders 1968, p. 203-4).

During this period, welfare rolls skyrocketed — the number of families receiving AFDC increased by 214 percent between 1960 and 1970 (Piven and Cloward 1979, p. 264). An important influence in welfare expansion was a short-lived but highly visible women's liberation movement, the National Welfare Rights Organization (NWRO). The NWRO was an organization of AFDC mothers whose activities were directed at class and gender issues. They demanded increased benefits, jobs, and sexual freedom including the elimination of "man in the house" rules. Although the NWRO was virtually defunct by 1970, at its peak it staged hundreds of sit-ins and confrontations at welfare offices (Piven and Cloward 1979, p. 303) and the percentage of eligible families applying for aid increased from about 33 percent in 1960 to more than 90 percent in some regions by 1971. Poor women came to view welfare as a right rather than a privilege (Patterson 1986, p. 179).

Political class-struggle theorists argue that state managers use welfare policy to "insure capitalist accumulation, ... to placate or encourage competing class groups ... and to rebuff demands of mass insurgents" (Griffin, Devine, and Wallace 1983, p. 355-6). A number of analyses linking the riots to welfare expansion support the "legitimation crisis" argument (Hicks and Swank 1983, p. 711; Isaac and Kelly 1981, p. 1371). Since the FAP, by some estimates, would more than double the welfare population, it could be viewed as an effort by the state to contain insurgency by expanding welfare. The planning of the proposal also supports this contention.

In March, 1967, New York Governor Nelson Rockefeller convened the Arden House Confer-

ence to evaluate the American welfare system. Invited to the meeting were heads of large corporations whose concern over urban rioting predisposed them to consider social issues. Taking income maintenance as their subject, conference members evaluated the relative merits of family allowances over a negative income tax and concluded that they favored the latter. Thereafter, they constituted an ongoing lobby to replace the existing welfare system with a program of automatic income maintenance (Moynihan 1973, p. 57).

The following year, in response to a National Advisory Commission Report on Civil Disorders (1968) calling for action to end poverty and racial discrimination, President Lyndon Johnson established a Commission on Income-Maintenance to consider welfare reform (Piven and Cloward 1979, p. 273). The group was headed by Ben W. Heineman, head of Northwest Industries, an industrial conglomerate, and included representatives from business, organized labor, and academia. The Heineman Commission also adopted and recommended to President Nixon a negative income tax with a \$2,400 cash floor for a family of four and abolition of food stamps (Burke and Burke 1974, p. 170).

If the urban riots represented a legitimation crisis for the state, then the solution proposed by both capitalists and the state, welfare expansion through the inclusion of the working poor in AFDC, seems to confirm the mass turmoil thesis. But according to the National Advisory Commission report (p. 129-30), the rioters were primarily young, black males. Survey data from Detroit, for example, indicated that 61.3 percent of the self-reported rioters were between the ages of 15 and 24 and 86.3 percent were under 35. Nearly 90 percent of those arrested for rioting in Detroit were male and more than half were single. Since the beneficiaries of a negative income tax would be employed household heads, how could such a plan stop single young men from rioting? The answer lies in an analysis of policymakers' views, which were focused more on the state of the black family than on the state of the economy.

The Crisis of the Black Family

By accepting the idea that the legitimation crisis was caused by riots and civil disorder, mass turmoil theorists failed to delve further into policymakers' interpretations of its source. The result is a superficial connection between insur-

gency and welfare expansion that misses the concerns about the black family that policymakers believed were linked to the crisis.

While policymakers believed that black unemployment and inequality of opportunity in the labor market prompted the crisis, they believed that the disintegration of the black family was the ultimate cause. This thesis first appeared in a report by Daniel Patrick Moynihan, then Assistant Secretary of Labor, which said "the breakdown of the Negro family led to a startling increase in welfare dependency" (Moynihan 1965, p. 12-3). The problem was rooted in the failure of the wage system to provide a family wage for black males, resulting in a "tendency for black women to fare better interpersonally and economically than men and thereby to dominate family life" (Rainwater and Yancey 1967, p. 6). As Moynihan (1965, p. 25, 29) explained, "Ours is a society which presumes male leadership in private and public affairs," but in the Negro family "the dependence on the mother's income undermines the position of the father." He called for "a national effort to strengthen the Negro family," which could not be accomplished until the government guaranteed that "every able-bodied Negro man was working, *even if this meant that some jobs had to be redesigned to enable men to fulfill them*" (Moynihan 1965, p. 93; Rainwater and Yancey 1967, p. 29). Moynihan proposed that government policy support black males in the labor market so that they could be reinstated as household heads, a goal that could be accomplished by reducing the labor force participation of black women. In his view, social policy could reestablish male dominance in the black family, a prerequisite for social stability.

The National Advisory Commission on Civil Disorders (1968, p. 13-4) reached a similar conclusion. "The condition of Negroes in the central city (was) in a state of crisis" because of chronic unemployment among males and because of the concentration of black males at the lowest end of the occupational scale. The employment problems of black males made them "unable or unwilling to remain with their families." Because Negro males had less secure and low-paying jobs, mothers were forced to work to provide support. Black family structure was directly related to the riots, as "children growing up under such conditions (were) likely participants in civil disorder."

A central cause, according to the Commission (p. 457), was the welfare system, which "con-

tributed materially to the tensions and social disorganization that (has) led to civil disorders." The solution the Commission proposed (p. 466) was a system of income supplements to subsidize those who worked at low-paying jobs and "to provide for mothers who decide to remain with their children."

Reconstructing the Family Wage

By subsidizing the low wages of black males, the FAP would indirectly resolve the turmoil in urban ghettos by providing incentives for black males to become family breadwinners and allowing black women to return to the household to take care of their children.

Although Nixon attempted to sell the FAP as a program to increase AFDC mothers' labor force participation, it contained no programs to accomplish this goal. When the Senate Finance Committee queried Robert Finch, Secretary of Health, Education and Welfare (HEW), on how the FAP might ensure jobs for program recipients, he responded that that was an issue which "more appropriately comes under Labor" (U.S. Congress, p. 321). Further, HEW had not studied the labor market to determine where and how jobs might be obtained and how many jobs were presently available (U.S. Congress, p. 384).

Under the FAP, the federal government would pay the costs of day care and would allow parents in training or employment to exclude this payment from their reported income, a revolutionary innovation (U.S. Congress, p. 305). But numerous gaps in day care planning rendered it ineffective. One problem was inadequate funding. Although HEW estimates placed the costs of adequate day care at \$2000 per child per year, the FAP allowed only \$858 a year. A second problem was that day care was not available and the FAP left provision of day care to a market that wasn't meeting existing demand, let alone low-income demand (U.S. Congress, p. 242, 305, 1742). Further, day care planning was weak, with HEW officials complaining that regulations were "unclear" about who was eligible and what agency was responsible for day care.³

³ Federal Archives and Records Center, Dept. of Health, Education and Welfare, Secretary's Correspondance Files, (hereafter FARC), RG 235, Box 3, "Periods of Eligibility for Day Care," HEW memo, Dec. 29, 1970; "Day Care Planners," HEW memo, April 2, 1970.

The FAP ignored the labor force participation of welfare women because the employment component of the bill was directed at men. As Finch explained, "In no state is any federally-assisted welfare available to families headed by full-time working men who earn poverty wages—the working poor.... We have backed ourselves into a situation in which we will help men who don't work (under AFDC-UI), but we cannot help those who do work."⁴ Similarly, another HEW employee explained to the Senate Finance Committee, "I would remind the committee that the term 'working poor' in this case is a term of art. It means families headed by fathers who are working full time at the present time and who are not covered by the present law" (U.S. Congress, p. 190). This definition was maintained throughout the various revisions of the FAP. In preparing an evaluation of the FAP for the Senate Finance Committee, the new HEW Secretary, Elliot Richardson, explained that "taken together these proposals do assure that the family of a working man will always be better off than a family of the same size headed by a man who is not working."⁵

The original version of the FAP called for 150,000 new training slots "to train people for jobs at decent wages whenever we find that they cannot get good jobs with their present skills" (Schultz 1970, p. 6). In discussing the training programs, Frank Carlucci, Director of the Office of Economic Opportunity (OEO), suggested ranking employment and training opportunities for the various categories of beneficiaries to be created by the FAP:

We believe that priorities for manpower services should be explicitly structured to provide for the maximum improvement in employability and earning potential, at minimum federal cost. We have already suggested that a high priority be assigned to AFDC-UI fathers. In general, we would support giving higher priority to the training and employment of men than women. Given the greater employment opportunities for men generally available, they are more likely to achieve self-sufficiency. Moreover, training and employment will

often be much more expensive for women, if child care must be provided.⁶

To the program bureaucrats, the working poor targeted by the FAP were male, and the challenge was to train the unemployed and to reward low-income breadwinners by guaranteeing male household heads sufficient income to support a family.

The FAP was structured to separate responsibility for welfare mothers and poor, working men. Administrators within HEW agreed that the manpower services under the FAP were "clearly the responsibility of the Department of Labor alone."⁷ The problem, however, was which agency, HEW or the Department of Labor, should administer benefits to the working poor when they were in the marginal status of registering for training or seeking work. HEW claimed responsibility "for female headed families in which no member is required to register for work or training" but agreed to transfer jurisdiction to the Department of Labor when "a family member actually enters a training program or public service job."⁸ Since training and employment were to be oriented toward male household heads, such an arrangement would create a dichotomy in welfare administration, with welfare mothers under the jurisdiction of HEW and men in training or in employment under the jurisdiction of the Department of Labor. Assumptions about family structure and the differential labor force participation of men and women were built into every component of the program.

A policy of supporting the poor male in his role as breadwinner was directed at black families, who constituted one-third of the working poor. Although Secretary of Labor George Schultz proclaimed that the FAP's goal was to place breadwinners in good jobs at good wages,

⁶ FARC, RG 235, Box 1, "Suggested Modification in H.R. 1. Paper prepared by the Office of Equal Opportunity for HEW Secretary Elliot Richardson, August 6, 1971. Tables prepared by HEW on the estimated impact of the FAP also emphasized male employment. See "What A Working Man Must Earn to be as Well Off as a Welfare Family."

⁷ FARC, RG 235, Box 1, Internal HEW Memo from Jim Edwards to John Montgomery, Sept. 22, 1971.

⁸ FARC, RG 235, Box 2, "Issue Memo Re Departmental Jurisdiction for Payment of FAP Benefits to Families," March 18, 1971, p. 3.

⁴ FARC, RG 235, Box 2. Prepared testimony of the Secretary of Health, Education and Welfare Before the Committee on Finance, July 21, 1970, p. 4. AFDC-UI paid benefits to unemployed fathers.

⁵ FARC, RG 235, Box 2, Letter from Elliot Richardson to Tom Vail, July 8, 1970, p. 3.

the economy was generating low-wage jobs, and Schultz (1970, p. 6-8) admitted that "we are not going to be remaking the economy in this program. We can only put people in the jobs that exist." Thus, the FAP channeled poor men, particularly black men, into the low-wage sector of the economy.

The FAP would have done nothing to improve the circumstances of AFDC beneficiaries, 85 percent of whom were in female-headed households, for they were not the working poor. Among AFDC recipients, less than 25 percent had some earnings (U.S. Congress, p. 1940). Nixon's only guarantee to AFDC women (a promise he could not keep) was that "in no case would anyone's present level of benefits be lowered" (Nixon 1969, p. 675).⁹ Implicit in the program planners' strategy was the notion that a family wage for low income males would resolve the income deficit of poor women by relocating them within a male breadwinner/female dependent family.

This analysis highlights the limitations of the mass turmoil thesis for explaining the expansion of social assistance. Although welfare expansion may be a response to a legitimization crisis for the state, it cannot explain the form of the state's response: reconstituting the working poor family. The legitimization crisis was rooted in what policymakers defined as a crisis of black family structure. The replacement of a social program that paid benefits to single women by one that supported intact families with an employed male demonstrates how policy can be influenced by male dominance. Designed by male bureaucrats, the FAP would have maintained the dependence of some poor single women on the state while transferring the dependence of others to a male breadwinner. Since benefits would be tied to the primary breadwinner's wages and to family size, it would reduce the importance of the wife's economic contribution to the household and subsidize childbearing, thereby encouraging her to leave the labor force. Neither welfare mothers nor women in working-poor households would have gained autonomy. Designed by white males, the

FAP also would sustain a racially segregated labor force and do nothing to increase the occupational mobility of black males.

THE ELITE AGENDA

According to the elite dominance perspective, state managers play a mediating role in program formation by selecting a fraction of capital as an ally. The most likely fraction is large-scale capital, which should support welfare expansion at the national level. Small business, by contrast, should work against any expansion "because of its direct need for labor and its anti-state bureaucratic orientation" (Isaac and Kelly 1982, p. 218).

The reaction of the business community, represented primarily by the National Association of Manufacturers (NAM) and the Chamber of Commerce, appears to sustain an elite dominance argument. State managers sought the cooperation of corporate capital while working to minimize the objections of small employers.

The NAM was dominated by large corporations (Burch 1973, p. 108). The Government Operations/Expenditures Committee of the NAM began studying AFDC reform in 1967 and agreed with the Nixon administration that welfare reform ranked "very high on the nation's domestic agenda" (Bolton 1971, p. 12).

HEW policymakers recruited Roy Bolton, chairman of the NAM committee, to sell the FAP to the NAM members. Bolton "was directly instrumental in mustering the support of the NAM's 20,000 membership" and "also testified on behalf of H.R. 16311 in the Senate."¹⁰

Although the NAM supported the FAP, its support was contingent on a number of revisions, including phasing out the food stamp program over a five-year period, eliminating the eligibility of anyone involved in a labor dispute, and removing the requirement that recipients be allowed to reject employment if the wage level was below that prevailing for similar work (Bolton 1971, p. 13). These revisions represented the traditional concerns of capital, as reflected in class-based theories—reducing income redistribution and controlling labor. The NAM's concerns were not expressed in political action, however, and its support was a negli-

⁹ Although Nixon (1969, p. 675) promised in his speech on welfare reform that "in no case could anyone's present benefits be lowered," when the FAP was revised to meet Senate Finance Committee objections, a loss in welfare benefits to those residing in high payment states would have occurred (U.S. Congress, p. 340).

¹⁰ FARC, RG 236, Box 2. Memo from Director of Welfare Reform Planning, Letter of Commendation to Mr. A.L. Roy Bolton, Nov 19, 1971.

gible factor. The NAM represented core employers in capital-intensive rather than labor-intensive industries, and the labor supply issues that the FAP generated were of little interest to its members. Thus, the NAM was able to take a broad perspective on welfare reform and saw the FAP as a mechanism for calming urban ghettos and encouraging work, particularly among black males.

The Chamber of Commerce, by contrast, was vehemently opposed to the FAP and undertook an extensive lobbying campaign against the proposal.¹¹ With 3,800 trade associations and local chambers and a direct membership of more than 35,000 business firms, Chamber influence was extensive.

According to Chamber analysts, the U.S. economy was troubled because the welfare state pushed the economy toward chronic budget deficits, because excessive cost-push by unions in an economy pledged to full employment had lessened the resistance of employers to wage demands, and because the shift in employment from goods to services had reduced productivity. The FAP would expand the welfare rolls enormously, reduce the amount of work performed, and raise taxes (Davis 1971, p. 766-7).

The key issue in Chamber opposition was the threat the FAP represented to its members' labor supply. Dominated by small service sector firms, many in the South, Chamber members were aware of the feminization of the labor force, both in regard to present needs and future expansion.¹² Since Chamber analyses indicated that most AFDC families were on welfare because of the loss of the primary breadwinner, the solution was "to make the remaining family adult—the mother—a regular breadwinner" (U.S. Congress, p. 1895). Local Chambers were advised to tackle the "manpower-welfare" problem by hiring women on welfare. A Chamber newsletter proposed an appropriate slogan: "If you won't hire her, don't complain about supporting her."¹³

¹¹ FARC, RG 235, Box 1, Internal Memo, Dept. of HEW, August 18, 1971: Report of our efforts to determine the positions of state and local Chambers of Commerce on proposed welfare reform legislation. See also "The Great Welfare Debate," *Nation's Business*, April, 1970, p. 56-59.

¹² See "Here Come the Girls," *Nation's Business*, December, 1969, pp. 38-41.

¹³ FARC, RG 235, Box 2. Excerpt from *Washington Report* newsletter, p. 5.

Although policymakers portrayed the FAP as a program designed to increase work among welfare recipients, it contained no real work requirement. If the household head refused work or training, other family members were eligible for benefits. Not surprisingly, the Chamber, which had studied welfare reform for more than a decade, focused on the lack of a work requirement. Although revisions in AFDC were necessary, the FAP would only further reduce work incentives (U.S. Congress, p. 1886). In the Chamber's view, the FAP was simply a guaranteed income that would eventually put 50 percent of the population on welfare.

The Chamber's efforts to defeat the FAP demonstrate the importance of class conflict among elites. It also shows that the labor supply issue was not merely a conflict between labor and capital, for it centered around a sex-differentiated labor force. Small service sector firms were interested in maintaining the advantages offered by a sex-segregated labor force and feared that expanding the welfare population would discourage welfare mothers and other low-income woman from working. Chamber members were not interested in empowering women through worklife participation but in preserving a supply of low-wage female labor.

IMPEDIMENTS TO WORKING CLASS ALLIANCE

Power resource theorists believe that universalistic social programs are most likely to be legislated when wage earners form alliances within and between class fractions. One argument suggests that the main impediment to class alliance is the power of the business elite, while a second emphasizes conflicts between unionized and nonunionized workers, which may be organized around race or gender as well as class.

In 1970, organized labor was entrenched in national politics. It was still closely linked to the Democratic party, and the Democratic majority in the Senate relied on labor's support for the passage of legislation. In spite of the relative political strength of organized labor, the U.S. working class was highly fragmented. Within organized labor, the powerful and progressive United Auto Workers union withdrew from the AFL-CIO over such issues as civil rights and organizing service sector workers and formed an unlikely alliance with the International Brotherhood of Teamsters (Barnard 1983, p. 197). During the 1968 presidential election, trade

unionists bolted from the Democratic party to support the segregationist ticket of George Wallace (Converse, Miller, Rusk, and Wolfe 1969, p. 1102). Further, "the emergence of demands for power-sharing and positive discrimination for blacks, Hispanics and women directly threatened the exclusivist operation of ethnic patronage politics and craft union apprenticeships" (Davis 1986, p. 223).

The welfare explosion of the 1960s added to working class fragmentation. State and local governments contributed at least 45 percent of the costs of AFDC, leading to racially-motivated resentment between the working and non-working poor (National Advisory Commission on Civil Disorders 1968, p. 461). As Finch explained to the Senate Finance Committee, the present law generated discontent among those who see others no worse off receiving welfare. Further, this discontent carried "ominous racial overtones...since current AFDC recipients...are about 50 percent nonwhite, while the working poor...are about 70 percent white."¹⁴ Unionists shared this resentment, as Clinton Fair, Legislative Director of the AFL-CIO, explained to the Senate, "One of the most frustrating and discouraging features of all is that a male worker, employed full time, may be worse off than his neighbor, working only part time, but receiving welfare" (U.S. Congress, p. 1728).

Yet when the FAP, an apparent solution to the AFDC mess, was first unveiled, organized labor opposed it because it violated "principles the labor movement ha(d) long espoused, including opposition to wage subsidies and minimum reliance on means-tested programs."¹⁵ The bill's quick passage in the House caught labor off guard, but by the time the FAP reached the Senate, labor was prepared to extract two major changes as the price of its support. Labor's bitterest opposition was directed at a provision specifying that a family head receiving FAP benefits be required, under penalty of benefit reduction, to work at a job not covered by the minimum wage so long as the job paid the prevailing wage for that work (U.S. Congress, p.

1729, 1747). Labor wanted to protect the minimum wage so that wages would not be frozen at poverty levels, undermining union wage levels (U.S. Congress, p. 1736).

A second issue for labor was the possibility that the FAP would flood the market with low-wage workers. Increased numbers of employable welfare recipients would be induced to work at the same time that the working poor would increase their work efforts. The result would be intensified competition for a fixed number of jobs and a proliferation of low-wage employment. In the long run, low wage rates in the subsidized sector would have a negative impact on wage rates in the non-subsidized sector. Burt Seidman, Director of the AFL-CIO Social Security Department, explained "there is no reason why the government through wage subsidies or tax credits, should 'buy' low-level jobs for welfare recipients" (U.S. Congress, p. 1730). Further, the proposed training programs threatened to undermine the union's autonomy over skilled craft jobs, allowing workers to enter the protected segments of manufacturing and skilled trades. According to Seidman, "FAP legislation should imply no authority for... training programs in the lower wage industries where prior skill or training is typically not a prerequisite to hiring and where labor turnover is high" (U.S. Congress, p. 1730). Instead, unionists demanded federal financing and administration of a separate tier of public sector jobs that would reduce this threat. Because the administration recognized that the FAP could not pass the Senate over AFL-CIO opposition, it incorporated labor's two demands (Burke and Burke 1974, p. 144) and organized labor withdrew its opposition to the bill.

The FAP represented a fundamentally different vision of a welfare state than that of organized labor. The FAP's poverty prevention agenda centered around increasing the supply of low-wage labor by reducing work disincentives in existing welfare programs and increasing labor flexibility at the bottom of the income distribution. Organized labor wanted manpower training under labor's control, a higher minimum wage, and improved social insurance.¹⁶

Why, then, did organized labor accept two minor concessions as a trade-off for withdrawing its opposition? The answer lies in the impediments to class solidarity that the FAP

¹⁴ FARC, RG 235, Box 2. Testimony of Robert Finch before the Committee on Finance, U.S. Senate, July 21, 1970 reprint, p. 5.

¹⁵ George Meany Memorial Archives, Silver Spring Maryland, Legislative Reference Files (LRF), Box 25, File 62, "The Negative Income Tax Dilemma, Welfare Reform and Possible Alternatives," p. 2.

¹⁶ Meany Archives, LRF, Box 25, File 62, "The Negative Income Tax Dilemma," p. 4.

would have reinforced. The major impediment was the segmentation of the working class by race and gender, which created further conditions for class fragmentation.

In 1970, the U.S. labor force was highly stratified on the basis of sex and race. Women were relegated primarily to peripheral service industries or to less secure, low-paying positions in the core sector of the economy (Form 1985, p. 45). Among males, whites held the predominant share of high-wage jobs and union contracts granted them job security and fringe benefits that provided protection over the life course.

Unionists had little concern for the nonunionized black and female low-wage service industry workers for they did not compete in the same labor market, and they took action to ensure that gender and racial barriers to class fragmentation remained. During the 1960s, the AFL-CIO launched a campaign against the Equal Rights Amendment for women and fought vehemently against government attempts to desegregate the construction industry in Philadelphia.¹⁷ Organized labor's actions support the view that a split labor market is partially maintained by privileged workers seeking to keep cheap labor non-competitive. When cheap labor is comprised of women and blacks, the bases of exclusion are clearly defined.

Not only was organized labor's agenda for the FAP directed toward its own maintenance, but unionists paid only lip service to the problem of the welfare poor. The concern over placing the working poor in jobs at minimum wage did not extend to nonworkers, "the unemployable or mothers with children in their care," whom labor was willing to leave at benefit levels below minimum wage (U.S. Congress, p. 1735). Although labor proposed increasing AFDC benefits up to the poverty level, this was not necessary for labor's support of the bill.

A second impediment to alliance formation between organized labor, the working poor, and the welfare poor was social policy. Those involved in social protest wanted access to high-wage employment and higher welfare benefits, placing them in direct confrontation with organized labor. Unionists feared both the high costs of welfare expansion and the erosion of market privilege.¹⁸

Once its self-protective concerns about the minimum wage and public service employment were addressed, organized labor was willing to lend its support to the FAP because skilled craft jobs remained reserved for white males. Organized labor did not perceive the FAP as a significant threat because the split labor market meant its impact would not be felt by its constituents. As one AFL-CIO position paper explained, the union's strategy on the FAP could be to "disavow (not necessarily publicly) any responsibility for the labor movement to 'solve' this problem. Instead, keep to our basic position as expressed in our Convention resolution and keep our options open as to solutions proposed by others. This means criticizing such proposals in their context but based on our overall principles."¹⁹

A final impediment to alliance formation was the avenue of political expression pursued by each class fraction. Power resource theorists emphasize institutional power and pay little attention to the noninstitutional avenues through which class struggle may take place. Institutional power, the formal mechanisms of political participation such as electoral and interest group politics, is most likely to be used by groups like organized labor with recognized authority to act in the political arena. The politically powerless poor, who have no formal opportunities to present their grievances, are often forced to rely on noninstitutional sources of power (Griffin, Devine, and Wallace 1983, p. 343). Disfranchised blacks used riots and welfare mothers used demonstrations and sit-ins to access a power structure that excluded them. The varying avenues of political expression prevented the different class fractions from forming an alliance because their demands challenged the very basis of the system (McAdam 1982, p. 38).

Although organized labor and big business supported the FAP, the only push for the proposal came from state bureaucrats who mediated among class fractions to resolve a legitimization crisis. Their failure to get this legislation through Congress suggests that the FAP's opponents were more powerful. Among these, Southern Congressmen were a formidable force.

¹⁷ Meany Archives, LRF, Box 55, Files 22-26; Box 6, Files 19-20.

¹⁸ Meany Archives, LRF, Box 25, File 62, "The

Negative Income Tax Dilemma," p. 2. High cost was mentioned as one of the program dilemmas.

¹⁹ Meany Archives, LRF, Box 25, File 62, "The Negative Income Tax Dilemma," p. 7.

FAP'S IMPACT ON THE POLITICAL ECONOMY OF THE SOUTH

Among the problems that the FAP would eliminate, according to Nixon (1969, p. 274), was "regional inequities in the distribution of benefits." Regional differences in potential program impact were a major factor in FAP's defeat.

The interest in welfare reform generated by urban unrest and the fiscal problems of northern cities did not exist in the South. According to HEW estimates, more than 30 percent of all FAP funds would go to California, another 38 percent to five Northeastern states, and the other 44 states would receive the remaining 32 percent (U.S. Congress, p. 292). Southern states would receive little or no fiscal relief because their existing benefit levels were low (U.S. Congress, p. 340). But the FAP would have an enormous impact on the Southern economy where per capita income was only 66 percent of that of the North or West.²⁰ The FAP funds would raise the entire Southern wage base and revolutionize its economy. By empowering blacks economically, the FAP would also empower them politically, undermining the structures that maintained caste relations in the South. How could the FAP accomplish such substantial changes when critics charged it was nothing more than a subsidy to low-wage labor? The answer lies in the tremendous political and economic differences between the South and the rest of the nation, a dualism that is seldom recognized as a significant factor in American welfare state development.

FAP's Impact on the Southern Labor Supply

Although administration estimates varied from proposal to proposal, there is no doubt that the FAP would increase the number of welfare recipients enormously. At the time of the Senate hearings, approximately 10 million persons were AFDC recipients. The FAP would increase the number eligible to 28 million (U.S. Congress, p. 254).²¹ What was significant, however, was the regional distribution of new beneficiaries. By

HEW estimates, the number of welfare recipients in high-benefit states like New York would increase by 30 to 50 percent, whereas welfare rolls in the low-benefit states of the South would rise by 250 percent to 400 percent (U.S. Congress 1970, pp. 981-84).

According to the original proposal, a family of four earning less than \$3,000 would qualify for a FAP supplement (Moynihan 1973, p. 137). Slightly more than 53 percent of black male household heads, 82.5 percent of black female household heads with children under 18, and 37.7 percent of white female household heads with children under 18 had incomes below the poverty level (\$2,970) in 1970 (U.S. Bureau of the Census 1970, Table 209).²² Furthermore, none of the Southern states had AFDC-UI, so the FAP would not only extend welfare payments, it would have to grant them to males of working age. HEW estimates that 35 percent of the Mississippi population would be on welfare if FAP were implemented were modest at best (U.S. Congress, Chart 2). Overall, it was estimated that 52 percent of those covered by the FAP would be Southerners and that two-thirds of poor blacks in the South would receive some payment (Armstrong 1970, p. 67).

Not only did the FAP have the potential of raising wages of blacks in the South, it could totally undermine local labor markets. A black male head of a family of four in the urban Deep South working at minimum wage in factory work or manual labor would gain only \$296 a year in income from the FAP plus \$360 in food stamps, a modest improvement. A large share of the Southern black urban labor force was not working at minimum wage jobs, but was only marginally employed. Two out of three black women workers in the South were employed in service jobs, mostly as maids at a median of \$40 per week. Under the FAP, service station attendant or a maid earning \$40 a week as the head of a family of four would earn \$3,408 a year, almost as much as a man working in a factory at minimum wage (\$3,984) (Armstrong 1970, p. 152). Thus, the FAP would equalize earnings at the bottom of the wage scale between men and women, blacks and whites, and minimum and nonminimum wage workers (Herman 1970, p. 4).

Since the greatest determinant of benefits was

²⁰ FARC, RG 235, Box 2, John F. Kain and Robert Schafer, "Regional Impacts of the Family Assistance Plan." Office of Economic Research, Department of Commerce, 1971, p. 24.

²¹ Estimates of the cost and coverage of the FAP were continually revised as changes were made in the bill or better data became available.

²² For white male household heads in Mississippi, the poverty rate was 8.1 percent (U.S. Census 1970, Table 209).

family size, the FAP would double or triple household incomes. A family of four would receive a minimum of \$2,350 through the FAP plus food stamps. The implications for rural blacks were even greater, for most rural blacks lived in large households.

The FAP undoubtedly would reduce the supply of low-wage labor in the South, particularly women. The FAP exempted any woman who had a preschool child, was over the age of 65, or had an unemployed husband, from the work registration requirement. According to an estimate of one Mississippi town, only two out of 18 maids would have to register to work in order to receive the full FAP payments (Armstrong 1970, p. 154). A number of small business associations in the South such as the Restaurant Association registered their opposition to the FAP (Armstrong 1970, p. 152). As Georgia Representative Phillip Landrum, who cast one of the three negative votes in the House Ways and Means Committee declared, "There's not going to be anybody left to roll these wheelbarrows and press these shirts" (Armstrong 1970, p. 68).

A steady stream of migrants from southern farms kept wage levels low in Southern cities. Because of the high cost of living in urban areas, the FAP would provide a financial disincentive to leave a farm job for a city job at minimum wage. According to U.S. Department of Agriculture statistics, the typical Southern farm laborer in 1969 earned a median wage of \$1,034. The FAP would triple his income with an additional \$1,443 in FAP payments and \$624 in food stamps.

The Empowerment of Southern Blacks

For more than a century, blacks had been excluded from welfare in the South because the welfare system was an instrument of social control, a part of the local racial caste system. Welfare caseloads in the Deep South averaged only 50 per 1,000 inhabitants compared to 125 in New York City, with blacks disproportionately excluded from welfare (Armstrong 1970, p. 66, 151). In Mississippi, for example, 55 percent of the state's population was below the poverty level but only 14 percent of those received any kind of assistance; less than 10 percent of Mississippians participated in the federal free lunch program (U.S. Congress, p. 1510). According to a U.S. Department of Agriculture estimate, 929,000 Alabamians in 1970 lacked the income necessary for a mar-

ginal diet, yet only 277,000 benefitted from USDA's food assistance programs (Salamon 1971, p. 18). As Robert Clark, the first black elected to the Mississippi legislature in almost 100 years explained, "Should you be able to walk or crawl, then you do not qualify for such programs" (U.S. Congress, p. 1510).

Evidence from HEW records demonstrates that the Southern welfare system was manipulated to provide planters with farm labor by supporting field hands at federal expense during the winter and forcing them into the fields at low wages in the spring and summer (Salamon 1971, p. 18). Under the Work Incentive Program, "welfare recipients are made to serve as maids or to do day yard work in white homes to keep their checks. During the cotton-picking season no one is accepted on welfare because plantations need cheap labor to do cottonpicking behind the cottonpicking machines" (U.S. Congress, p. 1511).

Although the Voting Rights Act of 1965 eliminated political barriers to voting by Southern blacks, economic barriers to political participation remained. By 1970, few blacks held political office. In only one of the 29 Mississippi black-majority counties did more than 50 percent of eligible black voters vote in county-wide elections between 1965 and 1970 (Salamon 1971, p. 17). Voting patterns in these counties show that the key to black voter turnout was not the amount of income but the source — counties with high black voter turnouts were those in which blacks were least directly dependent on whites for their livelihood. No other variables were "as strongly or as consistently related to the differences between black and white voter registration rates as were the combined effects of the concentration of white farm owners and the black farm tenants and laborers who typically worked for white farm owners" (James 1988, p. 205). As the U.S. Commission on Civil Rights concluded in 1968, barriers to black political participation in the South could only be eliminated "by eliminating the economic dependence of Southern Negroes upon white landlords, white employers, and white sources of credit - dependence which deters Negroes from voting freely and seeking political office" (Salamon 1971, p. 18).

Engaging in political activity threatened the welfare benefits received by black men and women. In the Deep South, blacks were systematically excluded from welfare for engaging in civil rights activities or registering to vote.

County officials cut blacks off the welfare rolls, suspended commodity distributions, and warned that benefits would only be restored only when blacks "surrendered their uppity ideas about changing the local balance of power" (Salamon 1971, p. 18; U.S. Congress, p. 1512; Armstrong 1970, p. 66).

Redistributing income also redistributes political power. By reducing economic dependence on whites, the FAP would empower blacks and undermine the local economy. Southern blacks, both men and women, were the one class fraction that would benefit from the FAP because it would free them from the necessity to accept the lowest wage work.

THE DEFEAT OF THE FAMILY ASSISTANCE PLAN

The Southern power elite was unwilling to relinquish existing political and economic arrangements. The most determined opponents of the FAP were Southern Democrats. In the Ways and Means Committee, five of the six Southern Congressmen opposed the FAP (Moynihan 1973, p. 257). Although the House passed the bill by an overwhelming majority, 79 of the 155 negative votes came from the 11 Southern states comprising the Deep South. Only 17 Southern Congressmen voted for the FAP (*Congressional Record* 1970, p. 12105-6).

The South alone could not defeat the bill. Another source of opposition emerged from liberal Senators on the Senate Finance Committee who were influenced by the vehement opposition of the National Welfare Rights Organization, which complained the FAP failed to address their problems of inadequate income and exclusion from higher paying jobs. At the urging of the NWRO, liberal Senator Eugene McCarthy (D-Minn.) scheduled an unofficial hearing on the FAP in the Senate Office Building in November, 1970. At these hearings, NWRO members testified against the FAP, which they feared would reduce their present benefit levels (Burke and Burke 1974, p. 163), and demanded that minimum AFDC benefits be raised to \$5,500, the average benefit in New York. Their opposition helped coalesce the liberal position. In the Senate Finance Committee, three of the six "liberal" Senators voted against the original proposal while a fourth abstained. The voiceless poor women on welfare had mobilized their political resources to protest a program that would reduce their eco-

nomie security.

By 1972, the FAP had alienated a number of powerful constituencies whose support was necessary for welfare reform. Southern conservatives and Northern liberals, urban welfare mothers and the Chamber of Commerce, all objected to the proposal. According to several interpretations, Nixon withdrew his support, deciding "that he would be wiser politically to have an issue than an enacted plan" (Burke and Burke 1974, p. 185).

This analysis demonstrates the importance of considering the potential impact of social policy as a factor in the policy formation process. In the case of the FAP, those who believed the proposal was against their interests lined up against it. Their combined opposition was more powerful than the coalition of big business, organized labor, and state bureaucrats who supported it. Coalition formation is not a unidimensional phenomenon, and the tendency of power resource theorists to examine positive instances of political action ignores the potential of coalition formation for policy defeats.

CONCLUSION

The defeat of Richard Nixon's proposal for a Family Assistance Plan appears to contradict the predictions of three class-based arguments about welfare state formation. All of the actors that the theories predict would be required for a successful policy initiative — organized labor, big business, and state bureaucrats — supported a proposal for a guaranteed annual income for the working poor. Yet the debates surrounding the FAP and the events leading to its defeat were not framed primarily by issues of class struggle. Instead they were dominated by conflicts of race and gender within the context of such "class" issues as labor force participation and social control.

While some evidence supports a mass turmoil thesis, this argument ignores the fact that the FAP was a response to policymakers' perceptions that the disintegration of the black family was responsible for the civil disorders of the 1960s. The result was not merely welfare expansion, as mass turmoil theory would predict, but welfare expansion centered around the reconstruction of the family.

Feminist theorists argue that welfare programs — initiated in a male-dominated state — maintain male dominance. Several features built into the FAP's operation confirm this view.

First, the FAP attempted to eliminate the disincentives to family formation in the existing AFDC program (which in many states disallowed payments if a man resided in the house) by subsidizing the low-wage labor of black males and paying benefits to working-poor households. Second, because FAP benefits were based on family size, they promoted child-bearing and encouraged women to leave the labor market and remain in the household to care for their children. Finally, benefits were calculated on family rather than individual income so that a woman's right to benefits depended on her husband's income. Beyond a certain point, additional earnings to the household (and most likely the woman's would be seen as supplementary given the higher earning power of men) would reduce the family payment. In a variety of ways, then (except in the South), the FAP would increase the dependence of women on men.

According to power resource theory, civil rights are earned through worklife participation. The link between citizenship and worklife participation depends on the ability of social policy "to modify the play of market forces" and free individuals from the cash nexus (Korpi 1989, p. 312; Esping-Anderson 1985, p. 228). Outside the South, the FAP had contradictory but non-empowering implications for black men and black women. It would have locked them into jobs with the greatest market pressure and the fewest opportunities for occupational mobility. Black men might gain authority in the household, increasing their gender power, but they would remain subservient to white males in the labor market.

The impact of the FAP in the South compared to the rest of the nation demonstrates the need for historically specific analyses rather than universal generalizations. As the plantation economy declined, the South developed around a low-wage industry and service economy that relied heavily on black labor. While the FAP might operate like a negative income tax in the North, it would have enormous consequences for the local labor supply in the South. The FAP benefits would have been so high relative to existing wage levels that they would reduce the power of the market over Southern blacks and allow them to refuse low-wage work. By empowering blacks economically, the FAP would empower them politically. Direct federal funds would expand the limited citizenship rights of Southern blacks and undermine the Southern

racial state.

What happens to class solidarity in a liberal welfare state? Power resource theorists suggest that dualism in social benefits is both a cause and a consequence of class fragmentation. Fragmentation stems partly from the resistance of actors in favorable market positions to attempts to redistribute resources to those in weak market positions. In the U.S., protected workers are white males, whereas women and blacks are in weak market positions. These lines of cleavage are a powerful disincentive to alliance formation. By highlighting the identity of challengers to the polity, a labor force divided by race and sex reinforces the exclusionary tendencies of unionized workers.

Varying definitions of the social policy agenda also reduce possibilities for class solidarity. The agenda of those involved in social protest — access to high wage employment, demands for higher welfare benefits — placed them in direct confrontation with organized labor, which wanted to preserve market privilege and prevent the drift of low wage workers into the skilled trades through benefits that subsidized low wages.

Finally, the political resources available to each class fraction formed an impediment to class solidarity. Power resource theorists emphasize institutional routes to power (for organized labor) but have paid little attention to the noninstitutional avenues of power (in this case, for poor women and blacks). State managers, large employers, and organized labor, who have greatest access to the polity, addressed the FAP through the formal mechanisms of political participation. The black underclass was outside of the political system of electoral politics — insurgency and protest were its main political resources. The different avenues of political expression of each class fraction prevented an alliance, not only because there was no common meeting ground, but because the tactics (and costs) of insurgency alienated organized workers.

The dominant arguments regarding the development of the welfare state stem from a political class struggle perspective in which the primary actors are labor and capital. Within this paradigm, welfare states arise in response to differing historical problems of production. Welfare programs mediate not only relations between classes but between politically dominant and politically repressed groups, as demonstrated by the failure of these theories to explain the

defeat of the Family Assistance Plan. Because gender- and race-neutral policy involves the redistribution of status and social power, its enactment depends on women and blacks becoming actors in the political process, not objects of policies made by white males.

The analysis sustains feminist arguments that social policy may be used to increase female dependence, but it also suggests that under certain historical conditions (those that existed in the South, for example) social policy may enhance gender and racial equality. If economic power gained through redistributive measures from the state creates political opportunities for the excluded, then social policy becomes a liberating force.

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FROM AN AUTONOMOUS TO A CAPTURED STATE AGENCY: THE DECLINE OF THE NEW DEAL IN AGRICULTURE*

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The United States Department of Agriculture (USDA) has been used as a critical case to defend very different theories of the state. State-centered theorists argue that the USDA of the 1930s was a citadel of institutional strength and illustrated the potential autonomy of the state. In the postwar era, society-centered theorists have used this same agency to demonstrate the role of social interest groups in determining state policy. This article compares the USDA in the New Deal, World War II, and early postwar periods to analyze the process by which the American Farm Bureau Federation, an organization representing elite farmers, gained influence over USDA policy making and implementation. Although state autonomy declined over the period, the state-centered account is supported. Administrative decisions initiated by the state set in motion the decline of bureaucratic strongholds within the USDA. As anticipated by state-centered theory, the legacy of the wartime planning effort played a central role in the enduring ability of the American Farm Bureau Federation to influence the USDA in the postwar period.

This article analyzes developments in the U.S. Department of Agriculture (USDA) during the New Deal era, World War II, and the early postwar years. During the New Deal era, the USDA was exceptionally bureaucratized and played an active role in defining agricultural legislation (Finegold 1981). However, in the postwar era, the USDA offers a classic example of an agency directly influenced (i.e., captured) by a social interest group. The American Farm Bureau Federation (AFBF), an organization representing elite farmers, has enjoyed privileged access to Congress and to the USDA for most of the postwar era (McConnell 1969).

The fate of the New Deal in agriculture is important because the USDA and its relationship with civil society has been used as a critical case to test general theories of the state. In Skocpol and Finegold's (1982, p. 171) state-

centered account, the USDA of the 1930s is characterized as an "island of strength in an ocean of weakness." Because of its bureaucratic insulation, the USDA played an autonomous and significant role in designing and implementing policies. In contrast, society-centered accounts offer the postwar USDA as the definitive case of an agency captured by a privileged interest group (Lowi 1969; McConnell 1969), and suggest that the reformist and state-building activities of the New Deal era simply masked the ongoing influence of elites (Bernstein 1968).

In order to control variation in theoretically relevant variables, this case study analyzes the USDA at three distinct times: the New Deal era, World War II, and the postwar period (Lijphart 1971, p. 689; Ragin 1987, pp. 46-7). Not only did the class structure, political structure, and agricultural political economy change very little over these three periods, but the same political party controlled the White House and, with the exception of 1946-48, the Congress. Nevertheless, institutional dynamics and policies changed significantly over these periods. From 1932 to 1940, the USDA grew stronger and more insulated; during World War II an organized interest group (i.e., the Farm Bureau) captured the USDA; and in the postwar period, the pattern established during the war was consolidated.

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At first glance, the ultimate decline of the USDA would seem to argue against a state-centered position. However, by deliberately including a period of declining state autonomy, I avoid sampling only positive cases (i.e., growing state autonomy). The issue is not whether the state's autonomy waxes or wanes, it is the adequacy of the causal account. If state-centered theory offers insights — and I argue that it does — then it must account for the decline as well as the expansion of the state's autonomy.

CONCEPTIONS OF THE STATE AND AGRICULTURAL POLITICS

A Society-Centered Theory of the State and Agricultural Politics

Society-centered theories insist on the causal primacy of social structures and interests. The activities of office holders, the state's institutions, and policy choices are treated as dependent variables, the product of social structures and forces (Krasner 1984). The society-centered account of the mid-century USDA stresses the power of affluent farmers and the American Farm Bureau Federation which represented their interests. In this view, New Deal policies disproportionately benefited the narrow interests of affluent farmers and the AFBF (McConnell 1969).

The society-centered theory of the state as it applies to the USDA is summarized in Table 1. The contributions of Lowi (1969) and McConnell (1969) represent this view because they offer a persuasive and well-documented argument that has had an enduring impact on our understanding of the USDA and of the state in general. While Lowi and McConnell do not ignore state structures — the AFBF had to influence key Congressional committees and the USDA bureaucracy — they focus on the politics of distributing the state's resources among interest groups (Krasner 1984, pp. 226-7). In examining the USDA, the question becomes: Which farmers received the greatest benefits? The answer is that elite farmers and the AFBF received disproportionate benefits (see Table 1). The state is seen as a structured arena in which interest groups compete, but it does not play an independent role nor does it have a distinct agenda. In this frame of reference, the ultimate "capture" of the USDA bureaucracy was an insignificant mopping-up exercise. The

analysis presented below challenges the historical accuracy of this account and questions its underlying theory of the state.

A State-Centered Theory of the State and Agricultural Politics

State-centered theory emphasizes the unique character of the state (Block 1980) and its potential autonomy (Skocpol 1980). The relationship between the state and society is variable. Where state bureaucracies are weak and penetrated by social interests, state structures and policies channel but do not substantially alter the effects of social structures and demands of social groups. It is also possible for a state that is dependent and reactive at one time to subsequently play a proactive role (Krasner 1984; Rueschemeyer and Evans 1985).

The theoretical commitments and historical expectations of state-centered theory are summarized in Table 1. The state derives power from its ability to coerce and administer. Occupying an office in the state bureaucracy confers power on the occupant (Krasner 1984, p. 228) and enables the office-holder to "shape the understanding of policy issues and alternatives" (March and Olsen 1984, p. 739). State-centered theory also stresses the influence of policy legacies — the bureaucratic strength of the USDA in the 1930s was based on preceding institutional developments. Thus, the disputes over the USDA involved more than the competition between agricultural elites and the rural underclasses. Office-holders deriving their power from and insulated by the USDA tried to build durable state structures to administer agriculture. These state officials pursued an agenda that was distinct from that of social interest groups (Finegold 1981, pp. 20-21).

Agricultural policy is among the most important tasks confronted by state builders. An ample food supply is imperative for social stability — food shortages or sharply rising food prices threaten the state's legitimacy (Tilly 1978, p. 396). Disputes over food and fiber production nearly partitioned the U.S. in the Civil War and remained prominent thereafter (Bensel 1984). The USDA was created during the Civil War and achieved cabinet status at the turn of the century. Its institutionalization proceeded rapidly (Benedict 1953, pp. 5 and 118-9; Skocpol and Finegold 1982, p. 171) and attests to the centrality of agriculture in the process of state building. The fact that 20 percent of

Table 1. Theoretical Commitments and Application of the Society-Centered and State-Centered Accounts to the USDA

Conceptual Issue	Society-Centered Theory		State-Centered Theory	
	Theoretical commitment	Application to USDA and agricultural policy	Theoretical commitment	Application to USDA and agricultural policy
View of state	State is an arena	Agricultural policies shaped by competition among interest groups in society and in state agencies	Potentially autonomous state	State brings own resources and perspective to agricultural policy disputes
Origin of policy agenda	Policy agenda defined by interest groups	Agricultural policy debate defined by farm organizations and brought into the state by legislators and civil servants tied to farm organizations	Policy agenda defined by state officials	USDA officials, especially the Bureau of Agricultural Economics, pursue a policy agenda distinct from that of farm organizations
Source of power of state officials	State officials derive power from society, especially interest groups	The power of state officials (in the legislative and executive branches) ultimately derives from allied social interest groups	State officials wield power as occupants of offices in the state	USDA officials influence agricultural policy debates and choices due to their position as agents of the state
View of politics	Politics is a struggle over allocation of resources	Agricultural policies distribute public resources among social groups, especially the AFBF and its constituency	Politics frequently involve a struggle over institutions and rules of process	Policy legacies and the logic of state institutions shape policy choices and define the range of policy options
Dynamics of transformation of state	State transformation is shaped by changing balance of power in civil society	The AFBF is increasingly able to shape agricultural policies to its benefit	State transformation is shaped primarily by the balance of power internal to the state	The waxing and waning of the New Deal in agriculture results from the institutional transformation of the state

the civilian labor force worked on farms in 1940 offers further evidence of the importance of agriculture (U.S. Bureau of the Census 1975, p. 126).

The rigid dichotomy between Marxist and Weberian theories of the state is eroding (see Evans, Rueschemeyer, and Skocpol 1985, p. 351). Marxist theory has traditionally stressed the primacy of economic structures. Many neo-Marxists, however, increasingly accept the unique institutional character of the state (Jesop 1982 and 1985; Miliband 1983). Many of the early efforts to "bring the state back in" were hampered by crude "Weberian imagery about state autonomy" (Evans, Rueschemeyer, and Skocpol 1985, p. 353), asserted that the state stands above and opposes society (see Miliband 1983, p. 67), exaggerated the unity of the state, and overestimated the extent to which state officials are aware of and serve its interests (Quadagno 1987, p. 119). The state-centered theory I defend rests on the argument that the state *may* be autonomous, thus avoiding economic reductionism on the one hand and the reification of the state on the other (Abrams 1982, pp. 187-9).

The society-centered theory argues that the changing balance of power among social interest groups explains the transformation of the USDA. The USDA's limited reforms of the 1930s were due to the mobilization of disadvantaged farmers and their access to politicians, not the independent activities of state officials. The eventual capture of the USDA is explained by the accumulation of organizational resources by the Farm Bureau. State-centered theory, on the other hand, argues that the USDA's bureaucratic insulation of the 1930s was genuine. Civil servants shaped and implemented policies independent of social groups and their power was derived from the state, not society. The capture of the USDA, according to state-centered theory, is explained by changes in the state and in the administration of the USDA.

U.S. AGRICULTURAL POLITICS IN THREE HISTORICAL PERIODS

Crises such as the Great Depression and World War II allow, and frequently require, the state to play an active role. But interventions made in response to an immediate challenge can have profound long term consequences. During a crisis period, a rapid shift in the balance of power may lead to a "tipping point" where ex-

isting institutional arrangements are overwhelmed (see Block 1980). "The kinds of causal factors that explain why a set of state structures is created in the first place may be quite distinct from those that explain its persistence over time" (Krasner 1984, p. 240). This study of the USDA highlights the qualitative difference between periods of institutional creation and transformation and periods of institutional stasis.

A New Deal for Agriculture

Before, during, and after World War II, the USDA remained prominent among federal agencies. New Deal agricultural policies carved out an unprecedented role for the state in controlling farm prices and the level of farm output. The USDA accounted for a major share of the Federal budget. From 1933 to 1939, the USDA spent 16 percent of all Federal funds and administered 39 percent of all federal loans (Arrington 1983, pp. 6-7). This represented a major enhancement of the state's role, one that went far beyond a regulatory role.

The contradictions of New Deal era agricultural politics. From the 1950s through most of the 1970s, a society-centered account which asserted that the American Farm Bureau Federation played an all-important role dominated. The 1935 "purge" of leftists within the USDA agency administering crop subsidies, the dismantling of the Resettlement Administration early in Roosevelt's second term, and the gutting of the Farm Security Administration during World War II are all seen as elements of the Farm Bureau's capture of the USDA (McConnell 1969). Before World War I, the USDA's Extension Service cooperated with businesses and affluent farmers to create county level Farm Bureaus (Danbom 1979). With the support of the Extension Service, these county units multiplied and joined together to form the national American Farm Bureau Federation. Before, during, and after the New Deal, the AFBF was the most influential lobbyist for agriculture (McConnell 1969, pp. 47-8), and the USDA was forced to turn to the Farm Bureau to implement the crop support programs of the 1930s. Far from threatening the Farm Bureau, New Deal policies contributed directly to its strength. AFBF's influence was exerted within the USDA and in Congress, especially in the agricultural committees.

In this society-centered account, agricultural

policies were shaped by the interests of elite farmers represented by the Farm Bureau (see Table 1). Landowners in the South, especially cotton growers, fought for generous federal subsidies but demanded that the program be controlled locally. Agribusinesses and commercial farmers in the corn-growing North Central region sought minimal production controls and were willing to accept lower levels of crop supports. The Farm Bureau's "corn-cotton" alliance was sustained by linking Federal subsidies to output and land holdings, with implementation controlled locally by committees heavily influenced by the AFBF (Campbell 1962).

Skocpol and Finegold challenged this society-centered view on the grounds that it ignored institutional developments within the state (see Table 1), and instead suggested that the USDA was "an island of strength in a sea of weakness" (Skocpol and Finegold 1982, p. 171). Prior to 1932, the USDA, especially its Bureau of Agricultural Economics (BAE), recruited a staff with expertise in agricultural affairs and developed an agenda distinct from that advanced by social interest groups. USDA staff members tried to "reform the power structure of farm politics" (Kirkendall 1966, p. 6). Agricultural economists working for the USDA and land grant system — not farmer organizations — developed the domestic allotment program that underlay New Deal farm legislation (Skocpol and Finegold 1982). The strength of the USDA bureaucracy permitted New Deal agricultural policies to succeed, while industrial policy implemented by a less effective bureaucracy collapsed (Skocpol 1980).

While Skocpol and Finegold (1982) agree with the society-centered account that the Farm Bureau had gained the upper hand by the late 1930s, both ignore the countervailing forces at work. The independence of the USDA bureaucracy and the influence of New Dealers in the USDA did not decline in the 1930s. Both accounts fail to adequately explore New Deal initiatives of the late 1930s and early 1940s. In fact, the most important New Deal offensive came in FDR's second term.

Not only did the New Deal spark a dramatic increase in the size of the USDA, it resulted in the recruitment and politicization of social scientists within the agency (Hooks 1983, p. 397). Henry Wallace, Roosevelt's Secretary of Agriculture during the 1930s, protected reform-minded social scientists and championed plan-

ning efforts. New Dealers worked with Wallace to centralize power within the USDA (Finegold and Skocpol 1980, pp. 60-2). In Roosevelt's second term, the role of the Bureau of Agricultural Economics went through "an abrupt and fundamental" transformation (Benedict 1953, p. 395). In 1938, Wallace elevated the BAE to the USDA's central planning office (Kirkendall 1966, p. 167), giving BAE unprecedented influence over USDA budgets — a key resource in the struggle to control organizations (Pfeffer 1981). After 1938, each agency was required to submit to the BAE a summary of proposed activities during the next budget cycle. This reorganization gave the BAE "the leadership in shaping policy recommendations, that is, functioning as a general staff for the Department of Agriculture" (Benedict 1953, p. 395).

The Agricultural Adjustment Act of 1938 began shifting control over subsidy payments away from Farm Bureau strongholds and towards the USDA bureaucracy. The impetus for this shift came "from administrative groups in the government agencies," not from farm organizations (Benedict 1953, p. 386). To maintain an "ever normal granary," the Secretary of Agriculture was mandated to stabilize stocks of agricultural commodities to insure adequate supplies but avoid over-production. The Secretary of Agriculture and the planners at the center of the USDA were authorized to make use of the soil conservation payments, crop subsidies, and agricultural lending to shape agricultural production (Benedict 1953, pp. 377-8).

The growing influence of New Dealers in the USDA was complemented by efforts to dislodge the AFBF and its allies at the local level (McConnell 1966, p. 238). In 1938, the BAE launched a land-use planning effort and created planning committees throughout the country. New Dealers worked to include "all rural groups" (Kirkendall 1966, p. 181), land-use planning was defined broadly to include a number of social reforms, and the BAE controlled the creation and operation of these committees (Kirkendall 1966, p. 172; Benedict 1953, p. 395). A number of states cooperated with the BAE, especially those with a tradition of hostility toward the Farm Bureau. Elsewhere, extensive negotiation and the withholding of USDA funds were required to establish the planning effort. By 1940, all but three states had officially enrolled (Kirkendall 1966, pp.

179). The BAE also gained influence over the Extension Service and land grant colleges in developing state and regional programs (Kirkendall 1966, p. 174).

The land-use planning effort quickly yielded results. The central offices of the USDA created direct ties to farmers, bypassing the Extension Service, the Agricultural Adjustment Administration, and the Farm Bureau. This included state-of-the-art opinion polling, county-level studies of agricultural economies, and a BAE training program for USDA staff members and farmers (Kirkendall 1966, p. 187). Moreover, the BAE resisted challenges mounted by the Farm Bureau and a hostile Congress. In 1938, as the BAE was consolidating its power, the Farm Bureau proposed a concentration of power in the Extension Service. Despite the sympathy of powerful legislators, AFBF proposals on these matters were not seriously pursued by Congress in 1939 or 1940 (Campbell 1962, pp. 164-5, 174-5). When pressed by the Farm Bureau to take a stand on land-use planning, the Land-Grant College Association declared its support for the BAE's position, and state Extension directors were divided (Kirkendall 1966, pp. 200-1). Despite the AFBF's efforts, land-use planning flourished. Contrary to the society-centered theory, the efforts of a strengthened AFBF and a hostile Congress did not lead to the collapse of the New Deal in the late 1930s. The outspoken support of Secretary of Agriculture Wallace and the New Dealers' budgetary and political authority neutralized the opposition.

The larger context of New Deal agricultural policies. The task is not to explain why the New Deal in agriculture withered in the late 1930s, but to explain how it flourished in the face of a stronger and more hostile Farm Bureau (Campbell 1962) and a conservative Congress (Patterson 1967). To examine this issue, the larger process of state building must be examined. Skocpol and Finegold (1982, p. 171) go too far in suggesting that the USDA was "an island of strength in a sea of weakness." Rather, the USDA was in the vanguard of efforts to centralize power at the federal level. However, it was only able to do so by virtue of parallel developments at the core of the federal bureaucracy.

Prior to World War I, "intellectual reformers" tried to professionalize the federal bureaucracy and improve administration (Skowronek 1982). In that tradition, New Dealers in the

Roosevelt Administration worked to create a "class of public administrators" insulated from interest groups (Schlesinger 1960, p. 416; see also Egger 1976; Kirkendall 1966). Academics and professionals served in the federal government in unprecedented numbers, bringing with them a commitment to government-led reform and centralized administration (Bensel 1984, pp. 152-3; Sanders 1982, pp. 132-3). The social scientists and planners at the center of the USDA were not isolated as the image of an island suggests, but were allied with New Dealers throughout the federal bureaucracy (Kirkendall 1966).

Roosevelt worked aggressively to strengthen the executive branch (Neustadt 1964), since a more potent federal bureaucracy would create "his own national political constituency, independent institutional resources, and an escape from the limitations that a locally based party state imposed on national leadership" (Skowronek 1982, p. 169-70). While the U.S. state never achieved a degree of organizational coherence and centralization to match the classically bureaucratic states (e.g., postwar France and Japan), Roosevelt did guide a process of state building that permanently transformed U.S. politics. The executive branch gained unprecedented freedom of action from the judiciary, the ability to manipulate deliberations in Congress, greater influence over state and local governments, and more immediate ties to the citizenry in program implementation.

Roosevelt sought revenge on the conservative Supreme Court which had declared the New Deal's agricultural and industrial recovery legislation unconstitutional (Leuchtenburg 1963, p. 145). In 1936, on the premise that the nine Supreme Court Justices were getting old, he proposed to appoint six new justices. Although his proposal was defeated in Congress, his effort contributed to a reorientation of the Court. In the next 30 months, six conservative justices retired, allowing FDR appointees to form a majority on the Court. This "new" court accepted a stronger and more potent federal bureaucracy and did not abolish existing New Deal agencies. At the same time, the Supreme Court controversy provided an opportunity for Republicans and conservative Democrats to join forces. The "Court fracas destroyed the unity of the Democratic party and greatly strengthened the bipartisan anti-New Deal coalition. The new Court might be willing to uphold laws, but an angry and divided Congress would pass

few of them for the justices to consider" (Leuchtenburg 1963, pp. 238-9).

The reorganization of the federal bureaucracy in the late 1930s also contributed to the uneven process of state building. In 1937, Roosevelt's Committee on Administrative Management outlined a plan to strengthen the Presidency (Karl 1963, p. 229-30; Polenberg 1966, p. 21). In 1937, in an atmosphere poisoned by the Supreme Court controversy, Congress defeated FDR's reorganization bill (Polenberg 1966, pp. 42-3; 51). However, by 1939, the separate features of the bill had quietly been enacted. Roosevelt gained several administrative assistants, greater freedom to reorganize the executive branch, control of the Bureau of the Budget (BOB), creation of the Natural Resource Planning Board, greater influence over the Civil Service system, and options to create new agencies (Karl 1963, p. 257). After 1939, the BOB, acting for the President, exerted greater control over the budgeting process and the activities of executive agencies. The reinvigorated BOB became a base of strength for New Dealers at the center of the federal government (Berman 1979).

Some observers stress the importance of the anti-New Deal Congress of the late 1930s and downplay the significance of executive branch reforms. Congress was resistant (Patterson 1967, pp. 214-29; Polenberg 1966), but this resistance merely delayed the reorganization (Karl 1963, p. 257). The state-building dimension of the New Deal was neither reversed, nor stopped in the late 1930s, suggesting that the New Deal rested on a very different foundation in 1940 than it did in 1932. The survival of the New Deal no longer depended upon the active consent of Congress but on the executive branch — its most important constituency resided in the White House. State structures had been strengthened, and agents of the state were better insulated from interest groups. These reforms of the federal government's core institutions were mirrored in several federal agencies with direct ties to society — most prominently the USDA.

Agricultural politics of the 1930s provide a vivid case of New Deal-era contradictions — both the Farm Bureau and the USDA bureaucracy gained power simultaneously. By the late 1930s, the causal factors specified by the society-centered account of the capture of the USDA were all in place: a larger and stronger AFBF, avid support for the AFBF from a more conser-

vative Congress, and AFBF strongholds within the USDA. Instead of being captured, the USDA remained insulated from these forces and challenged the AFBF at the national and local levels. Due to the overt support of the President and Secretary of Agriculture the New Deal in agriculture flourished. However, this account exposes the New Dealers' vulnerability. Unlike their adversaries, New Dealers lacked a viable base of strength in society. Should the focus of U.S. state building shift away from domestic bureaucracies and the support of the White House decline, a bureaucratically-inclined USDA would indeed be an island in an unfriendly sea. This is precisely what happened during World War II.

World War II and the Demise of the New Deal in Agriculture

Whereas industrial planning improved under the pressure of war, agricultural planning became more chaotic. In the industrial sector, the state directed the creation of entirely new industries (e.g., synthetic rubber), a shift from craft to mass production (e.g., aviation), and a significant expansion of output in a host of industries (see Hooks forthcoming; U.S. Civilian Production Administration 1947). In agriculture, the war effort did not require a dramatic transformation, only better coordination and more intensive production. Although federal agricultural planning had long been far superior to industrial planning (Skocpol 1980), wartime agricultural production was disappointing compared to the industrial mobilization.

World War II agricultural planning. During World War II, agricultural prices rose much faster than the overall inflation rate (Albertson 1961, p. 269) and net farm income went up nearly threefold (Gold 1949, pp. 388-9). Spiralling agricultural prices had a "severe impact on the cost of living" (Gold 1949, pp. 402-3), crippled attempts at price stabilization, and contributed to a rising wave of strikes. Despite high prices and incentive payments for selected commodities, the agricultural program failed to meet production goals. The USDA's price supports rewarded farmers for staying with existing crops and production practices, even if they were inconsistent with war needs (Gold 1949, pp. 293-4). This resulted in surpluses of unneeded crops (e.g., watermelons) and a staggering overproduction of other commodities, especially cotton. Throughout the agricultural

sector, inefficient producers absorbed scarce materials, producing unneeded commodities stored at government expense (Wilcox 1947, pp. 62-7).

In the society-centered view, the inefficient wartime agricultural planning resulted from the Farm Bureau's influence over the Agricultural Adjustment Administration (AAA), the agency responsible for the wartime program (see Table 1). Although the national interest was compromised, the narrow interests of elite farmers were well served — they made impressive profits producing expensive and unneeded goods. Moreover, the Farm Bureau reinforced its status as a privileged interest group in society, the Congress, and the USDA. While endorsing an expensive and inefficient program that served the AFBF and elite farmers, Congress laid siege to New Deal agencies and institutions in the name of administrative efficiency and frugality (McConnell 1969). In 1941 and 1942, the Agricultural Adjustment Administration was delegated the authority to implement the wartime program, the Bureau of Agricultural Economics was demoted, and the BAE's land-use planning was all but abandoned (Kirkendall 1966). But, contrary to the society-centered account, these decisions were neither dictated by the AFBF nor set in motion by a conservative Congress.

The key decisions were made by a new Secretary of Agriculture, Claude Wickard, who replaced Henry Wallace when the latter ran for vice-president in 1940. Wickard delegated planning authority to the AAA and demoted the Bureau of Agricultural Economics. The fact that "Wickard's role was crucial" (Kirkendall 1966, p. 215) does not necessarily contradict a society-centered account, as an important dimension of an interest group's power is its ability to influence political appointments. If Wickard were selected by Roosevelt to placate the Farm Bureau, the society-centered account would be corroborated by Wickard's important role. However, this was not the case — Roosevelt first asked M.L. Wilson, the "philosophical father" of land-use planning and the BAE (Campbell 1962, p. 176), to succeed Wallace, but Wilson declined due to poor health (Albertson 1961, pp. 148-9).

Wickard was not an ally of the Farm Bureau (Burch 1980, pp. 77-8) but remained distant from the AFBF during his tenure as Secretary of Agriculture. Wickard's actions as Secretary of Agriculture are better explained as an effort

to consolidate his authority. The growth of the central offices of the USDA in the 1930s was due to Secretary of Agriculture Wallace's active support. When he left the USDA in September 1940 to run for vice president, he left behind a network of high-level appointees who maintained a strong "intellectual and emotional allegiance to Henry Wallace" (Albertson 1961, p. 160). Especially threatening to Wickard was Wallace's administrative assistant and close confidant, Paul Appleby. Under Wallace, Appleby had managed the USDA and controlled access to the Secretary. The favorable treatment of the Bureau of Agricultural Economics and its land-use planning efforts were a direct result of Appleby's intercession. In the fall of 1940, Appleby tried to persuade Wallace, allies in the White House, and friends in Congress to make Wickard's appointment as Secretary of Agriculture temporary. Appleby also lobbied for the creation of a permanent assistant secretary of agriculture, who would "serve as a sort of administrative 'manager' of the Department regardless of who was Secretary or which political party ran the country" (Albertson 1961, p. 155).¹

In an effort "to be Secretary in fact as well as in title, Wickard set out to undercut Appleby's power" (Albertson 1961, p. 170). Just as the waxing of the BAE's power in the earlier period hinged on the active support of Appleby and Secretary of Agriculture Wallace, its decline in the 1940s was closely tied to changes at the center of the USDA. As Wickard reduced Appleby's influence over "the mechanisms of departmental administrative control" (Albertson 1961, p. 170), the BAE lost its privileged access to the Secretary of Agriculture.

This account of Wickard's actions calls into question the view that Wickard was a puppet of the AFBF. While his administrative decisions ultimately served the interests of the Farm Bureau, these decisions can only be understood as part of his strategy to consolidate his position: they were responses to an intra-bureaucratic struggle, not the dictates of an external interest group. The state-centered theory holds that state officials wield power as occupants of state offices, and political struggles are often fought over institutions and rules of process. Far from being the Farm Bureau's ally, Wickard "became anathema to the AFBF" (Burch 1980, p. 78). He fought bitterly against the Farm Bureau's effort to control USDA policy making and implementation, and was outspo-

ken in his defense of the USDA's anti-poverty agency, the Farm Security Administration (McConnell 1969, p. 122). Wickard ultimately failed. In 1943, control over the food program was transferred to the temporary War Food Administration (Benedict 1953, p. 405), leaving Wickard an "impotent bystander in his own department" (McConnell 1969, p. 122). Although Wickard's influence declined sharply during the war, as the occupant of the office of the Secretary of Agriculture — even a weak and vulnerable one — Wickard crippled the New Deal and tilted the balance of power in favor of the Farm Bureau.

The larger context of World War II agricultural planning. Roosevelt expanded and institutionalized his power throughout the war. "No war President had construed" his powers as Commander in Chief "so broadly or wielded them as vigorously as did Franklin Roosevelt in World War II" (Emerson 1958, p. 183). But Roosevelt's agenda and that of the domestically-oriented New Deal diverged during the war. Whereas in the 1930s, Roosevelt had protected New Deal agencies from attacks mounted by a conservative Congress, in the 1940s, he devoted his political power and prestige to shaping foreign and military policy and did little to protect New Deal strongholds (Blum 1976; Polenberg 1972).

Although the strategic and industrial planning at the core of the World War II mobilization seemed distant from agricultural politics, the changing administrative climate and balance of power in the larger state contributed to the demise of the New Deal in agriculture as well. Owing to the delays imposed by Congressional resistance, the Bureau of the Budget had not routinized its authority over federal agencies prior to the war. In the course of the war, the BOB was demoted and established civilian agencies were peripheral to the mobilization (Somers 1950; U.S. Bureau of the Budget 1946). Emergency agencies were created to coordinate the mobilization, and businessmen who retained their positions in private corporations dominated these agencies (Burch 1980, pp. 79-80; U.S. Bureau of the Budget 1946).

More important than the influence of businessmen in civilian agencies was the permanent expansion of the military bureaucracies. Agricultural spending roughly equalled defense spending in the 1930s. During World War II, however, non-defense expenditures (including agriculture) accounted for a mere seven per-

cent of federal spending (Smith 1959, p. 4). Military officers tenaciously defended their authority to decide which items were to be produced, by whom and on what terms (Connerly 1951; Smith 1959). Their spending authority gave the Armed Services de facto control of the mobilization. Legislators and other civilian leaders publicly criticized the Armed Services' procurement choices, but had few options to preempt the letting of contracts (Bernstein 1968; Hooks forthcoming; Koistinen 1973).

In the spring of 1943, after months of administrative chaos and confusion, FDR created the Office of War Mobilization (OWM) to exert final authority over the mobilization for the remainder of the war. This office was headed by James Byrnes, a southern Democrat who endorsed the influence of business and the military. The creation of the OWM further weakened the BOB and as "the relationship between the two agencies evolved, the Bureau of the Budget was pushed further aside in the field of policy coordination and formulation" (Somers 1950, p. 70). The demotion of the BOB reinforced developments inside civilian agencies — especially the USDA.

Wartime planning was based upon a system of "government by contract" (see Cawson 1985, p. 132) which delegated the state's authority to prime contractors and accelerated concentration among manufacturing firms (U.S. Smaller War Plants Corporation 1946). Large corporations were awarded the lion's share of prime contracts and reaped an enormous economic windfall in the form of investment capital and profits (Hooks, forthcoming; U.S. Smaller War Plants Corporation 1946). Further, the federal government allocated scarce materials among prime contractors according to their defense contracts (U.S. Civilian Production Administration 1947). Prime contractors then allocated these scarce commodities to subcontractors. Not only did the mobilization rehabilitate big business ideologically, policies that reinforced the economic and political power of monopoly sector firms were elevated to the highest form of patriotism.

The war years were not a period in which state institutions were destroyed and planning avoided. The "military-industrial complex" was forged in these years and would remain an imposing institution in the postwar period (Mills 1956). Moreover, the U.S. government implemented a planning effort of unprecedented

scope. Nevertheless, a number of planning agencies established by the New Deal were crippled or abolished. On issue after issue, the Armed Services resisted initiatives that were not directly subordinate to the mobilization (Koistinen 1973). A dispute over the size and content of the munitions program pitted the Armed Services, which based projections on strategic military planning, against civil servants and academics who considered the needs of the civilian economy (U.S. Civilian Production Administration 1947, p. 276; Smith 1959, pp. 154-7). In this dispute, the military established its strategic planning as preeminent, civilian concerns and the governmental offices charged with protecting them were marginalized (U.S. Bureau of the Budget 1946, p. 126). Similarly, efforts to plan and coordinate production of necessary civilian goods were resisted by business leaders and made impossible by the Armed Services' procurement program (McCauley 1946, pp. 41-7). These same dynamics shaped the explosive confrontation over reconversion at the war's end. Civilians, with New Dealers prominent, argued that preparing for peacetime should begin prior to the cessation of hostilities. The Armed Services countered that reconversion would disrupt war production and undermine the morale of civilians and soldiers (Peltason 1952, pp. 243-5; Sitterson 1946, pp. 97-8). The military's ability to stall reconversion is further evidence of a retreat from domestic planning as the state built the institutions to assume military and diplomatic hegemony in the postwar period (Hooks forthcoming).

The shift in Roosevelt's orientation, the changing balance of power at the core of the federal bureaucracy, and the marginalization of existing civilian agencies during the mobilization left New Deal agencies vulnerable. Republicans and southern Democrats strove to "win the war from the New Deal" (Young 1956, p. 23). The Federal Bureau of Investigation cooperated with an aggressive House Un-American Activities Committee in damaging investigations of civil servants, especially New Dealers (O'Reilly 1982, pp. 654-6; Young 1956, pp. 49-50). Congress also abolished a number of agencies that symbolized the New Deal, e.g., Works Progress Administration, Civilian Conservation Corps, and National Resources Planning Board (Polenberg 1972, pp. 79-87; Young 1956, p. 24).

Rather than being an island, the trend toward

centralization in the USDA and the New Dealers' control of its important offices during the 1930s were driven by parallel trends elsewhere in the executive branch. But the centralization of power in the hands of professional civil servants and the developing ties between the federal government and less affluent farmers ran against the tide in wartime Washington. The marginalization of New Dealers in the federal bureaucracy left reformers in the USDA with few allies. This vulnerability was compounded by Secretary of Agriculture Wickard's hostility to the BAE and land-use planning.

Contrary to society-centered theory, the actions of the AFBF and its Congressional allies were not responsible for the decline of the BAE. In 1942, AFBF President O'Neal demanded that the BAE be "restricted to research and fact finding" and forbidden to "build up a large staff reaching out into the States for agricultural planning purposes" (in Kirkendall 1966, p. 208). Although Congress obliged, the AFBF's victory came only after Wickard had already killed the program and New Dealers had been rendered impotent in the larger economic mobilization. The AFBF simply took advantage of wartime administrative changes and Wickard's decisions — it did not set these processes in motion.

In a short period of time the citadel of the New Deal had been transformed — New Deal influences were sharply reduced, and planning was firmly lodged in the hands of the Farm Bureau's ally, the AAA. But the process by which the USDA was "captured" conforms to the state-centered theory: policy legacies, state structures, and control of the state's resources shaped its transformation. As New Deal influence in the USDA depended on access and control of the state's resources, so the New Dealers' inability to control budgetary and administrative authority during World War II precipitated its rapid decline.

Why Was There Was No Postwar New Deal?

The wartime transformation permanently changed the USDA. Once "a path is taken it canalizes future developments....Past choices preclude certain strategies or make them very costly" (Krasner 1984, p. 234). Thus, the close ties between elite farmers and the postwar USDA is in important respects a legacy of World War II — not the New Deal.

The robust "iron triangle" in which the AFBF

representing wealthy farmers, Congressional agricultural committees, and allied USDA officials dominate agricultural policies is not only consistent with a society-centered account, but McConnell (1969) and Lowi (1969) use the postwar USDA as a classic example of a captured agency. While this theory identifies the role of civil servants allied with the AFBF, it fails to account for the activities of the reform-minded planners remaining in the USDA. The increasingly politicized New Dealers remaining in the USDA openly sided with proponents of Keynesianism and promoted extensive postwar planning (Hamby 1968; Kirkendall 1966). The ensuing analysis emphasizes the importance and the distinctiveness of the New Deal agenda for administering domestic prices and production.

The New Deal depended upon presidential support — but President Truman did not provide that support. Truman periodically backed reform to secure the support of key constituencies, not to remake the central government (Hamby 1973, p. 82). Conservative Democrats favored Truman over Henry Wallace as Roosevelt's running mate in 1944 because he would not use the presidency to advance a postwar New Deal. When he became President in 1945, Truman did not restore the Bureau of the Budget to an active role in policy making and implementation (Berman 1979, pp. 38-9), nor did he prevent the gutting of full-employment legislation (Bailey 1950, pp. 162-3). President Truman's failure to embrace the New Deal assured its demise.

Congress passed legislation that guaranteed price supports at wartime levels until 1947. Truman's first Secretary of Agriculture (1945-48), Clinton Anderson, endorsed the AAA domination of the agricultural program and the Farm Bureau's pervasive influence. High and rigid crop subsidies provided attractive prices to corn and cotton growers. Subsidies on exported cotton shielded U.S. cotton producers from world markets (Wilcox 1947, p. 225) while capitalizing the long delayed mechanization of cotton (James 1986).

Given trends throughout the federal government, a postwar resurgence of institution building and reform within the USDA ran against the tide. Nevertheless, the Bureau of Agricultural Economics remained the USDA's official planner and took the lead in preparing for reconversion. USDA planners argued that agricultural prosperity required a full-employment

program to create non-farm jobs for farmers working marginal lands (Kirkendall 1966, pp. 227-8). The BAE proposed to let cotton prices fall to world market levels, compensate cotton farmers for the difference between these prices and parity, and assist impoverished farmers to leave farming (Wilcox 1947, pp. 224-5). The BAE's proposal to restructure cotton production proved explosive. The Farm Bureau viewed the plan as ill-informed speculation by ivory-towered intellectuals at best; at worst, it was an attempt by leftists to disrupt race relations and social stability. Secretary of Agriculture Anderson opposed the plan, and Congress all but ignored it. Moreover, research conducted in preparation for the plan sparked another attack on the BAE when rural sociologists studying two counties in Mississippi found that racism was fundamental to Southern agriculture and predicted racial upheaval. Outraged southern Congressmen characterized the report as "ball-faced damned lies" and demanded that Secretary Anderson stop the "long-haired" researchers from misusing the taxpayers' funds (Kirkendall 1966, p. 236). With Anderson's blessings, Congress closed all regional offices of the BAE and ordered it to concentrate on production statistics.

Although the abortive effort to plan the cotton economy resulted in the demotion of the BAE, it neither purged New Dealers, nor prevented still another attempt at building a more centralized USDA. After his re-election, Truman chose Charles Brannan for Secretary of Agriculture in 1948. Brannan had worked in the Resettlement Administration and the Farm Security Administration before becoming an Assistant Secretary of Agriculture in 1944 where he supervised the BAE's postwar planning. Brannan tried to shift from price supports to income supports involving direct payments to farmers. The Brannan Plan did not focus on corn and cotton which were fundamental to the AFBF, but concentrated on perishable crops (e.g., milk, livestock, and eggs) where a threat of overproduction loomed. The Brannan Plan would subsidize the income of producers of these crops and keep prices paid by consumers low. Brannan argued that consumers would increase consumption of perishable commodities if they could afford them, thereby avoiding overproduction (Christenson 1959, Chapter 2). Under Brannan, New Dealers retreated to the center of the USDA, the Office of the Secretary, where they proposed to

expand agricultural planning and re-establish direct ties to producers, bypassing the AFBF's allies in the USDA.

The Brannan Plan was defeated in the House of Representatives in 1950. Instead, broad support surfaced for an alternative put forward by Democrat Albert Gore of Tennessee which continued high and fixed price supports. Dixiecrats secured a continuation of their desired policies without compromising with New Dealers (Christenson 1959, p. 162). Republicans, fearing a revival of an agricultural compromise within the Democratic party, also accepted a continuation of the status quo.

After Republicans regained the White House in 1953, the level but not the logic of price supports changed. The average parity ratio (an index of agricultural purchasing power based on a comparison with the 1910 to 1914 years) stood at 109 percent in 1945 and stayed above 100 percent through 1950. By 1955, however, the Eisenhower administration had reduced this ratio to 84 percent and in 1960 it stood at 90 percent (Bensel 1984, p. 194). These changes lent momentum to the exodus from rural America in the 1950s, including the massive migration of blacks from the South. By driving marginal producers from the land in great numbers, the Eisenhower administration successfully reduced the Democratic party's potential constituency (Bensel 1984, p. 216).

To undo the legacy of 20 years of Democratic rule, Eisenhower's Secretary of Agriculture, Ezra Benson, removed incumbent Democrats from the Office of the Secretary and as heads of major agencies. The Bureau of the Agricultural Economics was abolished and transferred to the Agricultural Research Service (Schapsmeier and Schapsmeier 1975, p. 52). Benson created a layer of appointments between himself and the USDA's operating agencies. Civil Service guidelines were ignored in making these political appointments, they were non-tenured and did not require Congressional approval (Talbot and Hadwiger 1968, pp. 154-5 and 238-9). The New Dealers' dream of creating a niche for professional administrators evaporated, as did the ability of the New Deal intelligentsia to shape USDA policy.

CONCLUSION

This analysis contradicts the widely-held belief that the New Deal collapsed in the 1930s due to a lack of societal support and under the weight

of its internal contradictions (Weir and Skocpol 1985). Efforts to centralize power within the federal bureaucracy, institutionalize a professional civil service, and develop more intensive forms of governance continued throughout the 1930s. Whereas the USDA became bureaucratically insulated in response to the domestic crisis of the 1930s, it was captured during the international crisis of the 1940s. During World War II, the U.S. established its economic, political, and military hegemony over the capitalist world. The wartime mobilization propelled the decline of domestic state building and the rise of the national security state.

During a crisis period, state institutions can be rapidly transformed, followed by "a long period of stasis" (Krasner 1984, pp. 240-1). Developments during these two periods are shaped by very different causal processes. In a period of crisis and institutional transformation, the pre-existing state structures play a profound role in excluding certain options while making other alternatives likely. In 1940, control of the USDA was being contested by New Dealers promoting state building and reform and another faction allied with the Farm Bureau. At this juncture, either path was possible. By the war's end, however, the institutional foundation of the New Deal had been destroyed. The postwar agriculture program was built upon the institutional foundations of the wartime program.

This case study supports the state-centered theory. Even the capture of the USDA, an outcome anticipated by society-centered accounts, can only be understood by analyzing the state and its institutions. Despite growing conservative strength in Congress in the late 1930s, New Dealers flourished in the USDA. Professional civil servants, as office-holders, drew their power from the state and resisted attacks mounted by the Farm Bureau and its allies. In turn, the rout of New Dealers during World War II was propelled by the changing administrative environment and the decisions of a weak Secretary of Agriculture. New Deal planning institutions depended first and foremost upon the support of the Secretary of Agriculture and the President. As these were removed, New Deal enclaves in the bureaucracy and their planning efforts atrophied. The Farm Bureau and its Congressional allies finished the task — but they did not set the process in motion. Even in the underdeveloped U.S. state, the logic of existing institutions and the power of office-hold-

ers were critical determinants of the transformation of the USDA.

Although this article supports a state-centered theory, I emphasize the importance of avoiding crude Weberian premises when bringing the state back in (Evans, Rueschemeyer, and Skocpol 1985, p. 353). First, since the state is not immune to outside influence, analyses of the state must examine social dynamics. This account of the transformation of the USDA focussed on the changing form, intensity, and efficacy of social influences. Second, as Quadagno (1987) notes, the state is not monolithic. This research provides evidence of the unevenness of institutional strength and change across state agencies. Exploring both the growth and decline of state autonomy helps maintain a focus on the "particular fit between economic logics and state action" (Block 1986, p. 180) rather than seeing the state in a socioeconomic vacuum. Examining the decline of autonomy — and not simply its emergence — reduces the temptation to reify the state when bringing it back in.

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CLASS, CULTURE, AND CAMPAIGNS AGAINST VICE IN THREE AMERICAN CITIES, 1872-1892*

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In the late-nineteenth century, anti-vice societies that attempted to eradicate obscenity, gambling, and other vices, were founded, led, and supported by the upper classes of Boston and New York but received virtually no support from the upper class of Philadelphia. The literature on moral reform movements argues that such movements are instances of either cultural or status defense unrelated to class conflict, or that they defend strictly material class interests. I argue that the importance of culture in the reproduction of class positions implies that moral reform movements are a form of class politics. Variation in strength of support for the anti-vice movements is explained as a response to the political and social threat posed by the immigrant working class and mediated by cultural consensus within the upper class.

Only two of the score of literary censorship societies founded in American cities between 1872 and 1892 left many traces in the historical record. The legacy of these societies, reflected in twentieth century language and law, still commands our attention. The New York Society for the Suppression of Vice (NYSSV), founded in New York City in 1872 by Anthony Comstock and his wealthy supporters in the Young Men's Christian Association, helped sponsor the passage of anti-obscenity laws in almost half of the states. The overturning of the Comstock Laws formed the judicial precedent for the 1973 *Roe v. Wade* decision legalizing abortion. Comstock's standards for decency in art spawned the word "Comstockery" to denote prudery. In Boston, the Brahmin backers of the New England Society for the Suppression of Vice (NESSV, renamed the Watch and Ward Society in 1890) were such vigorous censors of literature that the term "banned in Boston" came to describe the Victorian literary standards of the city (Boyer 1968, Johnson 1973; McCoy 1956).

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The class basis of the anti-vice movement raises interesting sociological questions. The New York Society for the Suppression of Vice was founded, led, and supported by such notables as J. P. Morgan, David Dows, and members of the Rensselaer, Colgate, Cornell, and Dodge families. A similarly wealthy and prestigious group supported anti-vice efforts in New England (Amory 1957; Boyer 1968; McCoy 1956). In contrast, Philadelphia was a virtual non-starter in the field of literary censorship. The Philadelphia anti-vice effort received so little support that historians and sociologists have assumed that the city had no censorship movement (Baltzell 1979; Boyer 1968). Why did the upper classes of Boston and New York, but not Philadelphia, support the anti-vice societies?

In this article, I show that Philadelphia had an anti-vice society, and discuss why its anti-vice campaign was less successful and less supported by the elite than the societies in New York and Boston. Existing theories of moral reform movements, which focus on the norma-

me locate the records of the New England Society for the Suppression of Vice. I would also like to thank the staffs of the Library Company and the Treasure Room at Haverford College for their encouragement and assistance. I am grateful for helpful comments from many colleagues, especially Ronald Aminzade, Renee Anspach, Paul DiMaggio, Neil Fligstein, Michael Kennedy, Terrance McDonald, Karl Monsma, Sharon Reitman, William Roy, Howard Schuman, William Sewell, Jr., Marc Steinberg, Mayer Zald, and anonymous reviewers.

tive aspects of these movements and ignore class dynamics, do not explain the mobilization of anti-vice support in Boston and New York or its relative failure in Philadelphia.

I propose an alternative; that the politics of lifestyles are often a form of class politics. Because the economic position of individuals is reproduced in part through the social value placed on various aspects of lifestyles, classes struggle to maintain the prestige accorded to symbolic markers. The family is often the focal point of these struggles because it is the most important institution for transmitting class culture to children. Lifestyle politics are one form of conflict between classes, and moral reform movements may be linked to other battles over economics, politics, or culture. The success of censorship in Boston and New York, and its failure in Philadelphia, is explained by the effect of political and social pressure on the elite from an immigrant working class. Since conflict over lifestyles can take place within classes as well as between them, the difference between Boston and New York in the rhetoric and success of their anti-vice societies is explained by the cultural heterogeneity of New York's upper class, which reduced levels of support for the anti-vice organization and generated disputes about censorship.

THEORETICAL APPROACHES TO MORAL REFORM: CULTURE VERSUS CLASS

Much of the literature on moral reform movements analyzes these movements in either cultural or material terms. Most sociologists explain these movements as instances of status or cultural defense, meaning attempts by individuals to defend their values or prestige. Gusfield (1986 [1963]) interpreted Prohibition as a conflict between status groups, arguing that the movement offered its supporters no material benefits, but enhanced their social prestige by lending the support of the federal government to their claims of having a superior lifestyle. The theory that moral reform movements are symbolic attempts to preserve social prestige has been widely criticized and replaced by the theory that lifestyle politics are attempts to defend cultures and values (Brandmeyer and Denisoff 1969; Clarke 1987; Page and Clelland 1978; Wallis 1977; Wood and Hughes 1984). However, Gusfield's separation of status from class dynamics, and his argument that the supporters

of such movements are "cultural fundamentalists" who hold values emanating from the rural "old middle class," pervades the moral reform literature (Gusfield 1986, p. 140; Page and Clelland 1978; Wood and Hughes 1984; Zurcher and Kirkpatrick 1976). Divorcing moral crusades from status group competition while denying that cultures are linked to social classes has undermined attempts to link lifestyle politics to group struggles. Socialization may explain an individual's support of moral reform, but focusing on individual values obscures the structural underpinnings of such movements. Furthermore, opposing class-based to culture-based explanations of moral reform leads researchers to ignore findings that link support for such movements to class position. Both Page and Clelland (1978) and Wood and Hughes (1984) found that education is a determinant of support for censorship, yet overlooked the linkage between education and social class that implicates class dynamics in such movements (Billings and Goldman 1979; Sewell, Haller, and Ohlendorf 1970).

Baltzell attributes the success of nineteenth-century censorship in Boston and its failure in Philadelphia to Philadelphians' Quakerism, which he claims produced an "anti-authoritarian" ethic that bred "excessive tolerance" (1979, p. 49-53, p. 103). The assertion that Puritan and Quaker values account for the differential success of censorship movements is a variant of the argument that socialized values cause morality movements.

While most studies of moral reform movements focus on cultural causes and ignore class, others focus on economic interest. Elliott and McCrone (1987) assert that Britain's New Right struggled against changes in sexual morality, divorce laws, and women's roles because they threatened the function of the traditional family in capital accumulation. Assuming that class interests are always material reduces the defense of the family to pecuniary considerations. An adequate theory of moral reform should explain how culture and lifestyles are linked to class, but should not reduce cultural dynamics to economics. It should also consider the role that class cultures play in class relations.

CLASS CULTURES AND SYMBOLIC POLITICS

Luker's (1984) study of the modern pro-life and pro-choice movements is sensitive to class

dynamics and avoids reducing culture and ideology to economic interest. The modern abortion conflict, she argues, is a debate over the meaning of motherhood between career women, whose economic livelihood depends on being able to control their fertility, and housewives, who are dependent on their role as full-time mothers. Decisions about careers for women, based largely on socialized values rooted in women's class backgrounds, determine, in part, the class position of families. Women's resulting dependence on certain roles in the paid or unpaid labor force determines their positions in the abortion debate (Durham 1986; Luker 1984). Luker's insights can be generalized to other moral reform movements by considering the roles that culture and values play in class reproduction.

Existing writings on class and culture suggest that culture reproduces class position through three processes. First, Bourdieu argues that cultural knowledge, tastes, and style of presentation vary by class and are used consciously or unconsciously in the allocation of educational credentials, jobs, and in making marriage decisions. Cultural assets are converted into wealth through the operation of social networks such that class symbols reproduce as well as reflect economic power (Bourdieu 1984, 1988; Brubaker 1985; DiMaggio 1979; DiMaggio and Mohr 1985; Lamont and Lareau 1988). The structural barrier that culture erects between classes implies that classes, and the upper class in particular, have an interest in defending class symbols, and that class conflict takes cultural as well as economic and political forms (Bourdieu 1984, 1985; Joppke 1986).

Second, inter-generational reproduction of class position is accomplished, in part, by socialization into class cultures (Bourdieu 1984; Robinson 1984). Parents teach children their own values when they believe that these values help them succeed. However, this strategy, which is largely motivated by fears of childrens' downward mobility, limits upward mobility because the conformity demanded by working class jobs is a handicap in middle class occupations (Kohn 1969). Furthermore, the socialization of children into the class culture of their parents endows them with a set of values (what Bourdieu calls a *habitus*) that predisposes them to react to the world in a similar (and thus class-based) manner (Bourdieu 1984). Actions to defend one's own values are not motivated by a rational calculation of the economic worth of

class symbols, but are, unconsciously, a defense of the culture of one's class.

Finally, culture helps generate the social networks that transform those who share a privileged economic position into a social class (Bourdieu 1987; Giddens 1973; Zeitlin 1988). Family networks consolidate economic capital and create alliances across different economic segments of the elite, forming the basis for shared class interests (Farber 1971; Hall 1978; Wallace 1972; Zeitlin 1974, 1988). Such networks were crucial in the nineteenth century, where the capricious economic environment made judgments of character an important basis of business decisions (Greenberg 1988, p. 357; Wallace 1972). The continuing importance of the family is reflected in the duties of upper class women, who serve as guardians of institutions such as dancing classes, clubs, and schools that insulate children of the upper class from social inferiors and help maintain class endogamy (Blumberg and Paul 1975; Daniels 1988; Domhoff 1971; Ostrander 1980, 1984).

I argue that the formation of these institutions was impelled by changes in American society wrought by industrialization that created a variety of problems for upper class parents trying to reproduce themselves (and their class) in the late nineteenth century. These societal changes generated elite support for the anti-vice societies. Anti-vice mobilization was intimately related to three aspects of upper class formation and reproduction: the loss of political control of the cities to immigrants, the attempt to control upper class childrens' social environment by sending them away to elite boarding schools, and the formation of a high culture that united the upper class across local boundaries and insulated them from social inferiors.

Quakers' tolerance does not explain the feeble anti-vice support among Philadelphia's elite, because the only successful anti-vice efforts in the city were led by Josiah Leeds, a rich and prominent Quaker, and were supported by the Meeting. I suggest that the elite of Philadelphia did not support the anti-vice society because the immigrant population of Philadelphia was relatively small and not politically organized, allowing the elite to maintain control of city government. The security of the Philadelphia upper class also retarded the formation of upper class institutions, particularly art museums and boarding schools, relative to the pace at which these institutions were formed in Boston and New York. The support given to anti-vice

societies in Boston and New York, where foreign-born populations were larger, poorer, and more politically powerful, is explained by the link between anti-vice efforts, the creation of elite institutions, and attempts to wrest control of city government from the foreign-born.

Struggles for cultural dominance can occur within or between classes. Because Boston's upper class was less fragmented than New York's, the New England anti-vice society was less controversial and more successful. DiMaggio (1982) asserts that Boston's elite, weakened by the loss of local political control, attempted to strengthen itself by erecting cultural barriers between the elite and the lower classes. I hypothesize that this process was more problematic in New York than in Boston because lack of a single standard of upper class culture meant that art censorship attacked the tastes of competing upper class segments. The creation of high culture in New York raised issues of what elite values would be embedded in it. No such controversy arose in Boston, resulting in the most successful and widely-supported anti-vice society.

DATA AND METHODS

These arguments are tested using the method of controlled comparisons of historical cases that Skocpol and Somers (1980) call "macro-analytic comparative history." The test of the hypothesis that immigrant political and social pressure explains Philadelphia's feeble support of anti-obscenity efforts contrasts anti-vice efforts in Boston and New York with those in Philadelphia. The role of cultural consensus within the elite in explaining anti-vice success will be examined by comparing New York's controversial censorship efforts to those in Boston.

Data are drawn from primary and secondary historical sources. Discussions about the cities and their elites are based on existing histories. Very little historical work has been done on the anti-vice societies in Boston and New York and no previous work has been done on late nineteenth century censorship in Philadelphia; therefore, almost all of the data on the anti-vice societies are taken from primary sources (Boyer 1968; Johnson 1973; McCoy 1956). Most of the papers of the New York Society for the Suppression of Vice were destroyed after Comstock's death (Johnson 1973). However, the NYSSV published detailed annual reports, and Com-

stock wrote several books about his crusade. These, in combination with newspaper accounts, surviving letters, and Broun and Leech's (1927) biography of Comstock supplement existing histories of the NYSSV. The New England Society for the Suppression of Vice also published annual reports, and the minutes of Executive Committee meetings have survived. The papers of Josiah Leeds, consisting of letters and newspaper clippings (most of which indicate a date but not a source), contain a great deal of information about the history of censorship in Philadelphia.

Data on individuals are taken from a variety of published and unpublished sources. Contributors to the Boston and New York anti-vice efforts are listed in the societies' *Annual Reports*. Comstock's supporters in Philadelphia signed the call for a meeting to found an anti-vice organization (Leeds Scrapbooks, Quaker Collection, Haverford College [hereafter *Leeds*] vol. 3, p. 37). The Citizens' Association of Boston *Annual Report* for 1889 lists Boston's civic reform supporters; supporters in Philadelphia are taken from Gillette (1970). Occupations of anti-vice supporters are taken from the city directory for the first year they contributed (*Boston City Directory*; Trow City Directory Company 1872-1892). The New York *Tribune Monthly* list of "American Millionaires," published in 1892, was used to identify millionaires in each city; listings in the *Social Register* are taken from the New York City and Philadelphia *Social Registers* for 1892 and the Boston *Social Register* for 1890 (New York Social Register Association 1890; 1892a; 1892b).¹

THE HISTORICAL CONTEXT OF THE ANTI-VICE CRUSADE

The upper classes in the late nineteenth century faced a variety of problems in reproducing the structural position of their class and the class position of their children. Some of these problems were political. Control of city government in the Gilded Age was hotly contested and fought along cultural and economic as well as political lines. The arrival of masses of immigrants in Boston and New York, particularly

¹ The 1890 Boston *Social Register* was used because it was readily available. Since listing in the *Social Register* is related more to family origin than to individual achievement, the two-year disparity is unlikely to affect the findings.

Irish, eroded the local political influence of the upper classes. After years of a strong Irish presence on their City Councils, both New York City and Boston elected their first Irish mayors in the 1880s (Blodgett 1984; Higham 1955, p. 60; Teaford 1984, p. 48). The political struggle between the native elite and Irish immigrants was often reflected in cultural conflict. In 1888, New York's Mayor Hewitt, who was native-born, quarreled with the Board of Aldermen over whether the Shamrock Flag would fly over City Hall on St. Patrick's Day; his subsequent refusal to attend the St. Patrick's Day parade ultimately ended his political career (Higham 1955, p. 41; Teaford 1984, p. 52). Boston's native Protestants reacted with horror to the pronouncement of Hugh O'Brien, elected Mayor in 1884, that Boston had become "the most Catholic city in the country," and to his closing the public library, whose board was one of few elite bastions in city government, on St. Patrick's Day (Solomon 1956, p. 53; Teaford 1984, p. 74). In the 1880s, the Catholic church expanded its system of parochial education in order to educate children in Catholic religious doctrine and remove them from a hostile public school system. The political result was a battle over public funding of parochial schools and their supervision by local school boards (Solomon 1956). More galling than cultural issues were conflicts over taxation and municipal debt. Between 1868 and 1874, the municipal debts of Boston and New York tripled; the depression of 1873 caused a decline in the value of city property that precipitated financial crisis. The result was a system of taxation that, to the eyes of the elite, was rife with graft (Teaford 1984, p. 306). Elites in both cities responded by enacting state legislation that stripped power from the City Councils and sometimes from the city government itself (Teaford 1984, pp. 18-19). Immigrant domination of city politics also meant that the police could not be relied upon to control vices that the upper class attributed to immigrants (Higham 1955; Solomon 1956).

One upper class response to the immigrant presence in the cities was to send children to boarding schools in the country (McLachlan 1970). The popularity of New England boarding schools in the late nineteenth century is indicated by the birth of Groton, Taft, Hotchkiss, and Choate, among others, in this period (Cookson and Persell 1985). In addition to sheltering scions from city vices, these schools were vital for the formation of a national upper

class, serving to make the children of parvenu parents suitable for marriages and friendships that united the upper class across regional and economic cleavages (Baltzell 1958; Cookson and Persell 1985; Roy 1984). But parents still had to worry — children at boarding school were removed from direct parental supervision, and it was not clear that they were safer from alien values at school than they were at home.

The formation of institutions of high culture helped resolve two problems facing the upper class in the late nineteenth century. First, it allowed the elite to define and control an arena that was immune to the assaults of immigrants (DiMaggio 1982; Green 1966). High culture exemplified by magnificent public buildings allowed the upper class to define "culture" as something old, expensive, and European, available in American cities only because of upper class munificence and bestowed upon the public for its ennobling and civilizing effects (Trachtenberg 1982).² Second, high culture helped define class boundaries in an era when vast fortunes were being made and new upper classes were developing in cities around the country. Patronage of the arts showed one worthy of elite company, regardless of family or regional background (Roy 1984). Endowing scions with refined tastes increased the probability that they would choose an appropriate marriage partner, who either shared refinement from birth or who had acquired it because of elite schooling. The use of high culture in maintaining class endogamy was particularly important as the upper classes transcended local boundaries to become a national class. High culture excluded the poor and middle classes, but allowed selective incorporation of the parvenu. The sense of refinement and privilege bestowed by art patronage may have been especially important to an upper class faced by masses of impoverished but increasingly politically mobilized immigrants, and fostered the belief that the upper class benefited all of society (Metropolitan Museum of Art 1874).

While the upper class faced a variety of problems in the late nineteenth century, and upper

² In contrast to the definition of culture during the Jacksonian era, this definition was profoundly anti-democratic. While the early nineteenth century upper classes patronized art that glorified the American small farmer as a symbol of the American character that built democracy, Gilded Era elites patronized art that glorified leisure (Burt 1977; Johns 1986).

class formation was predicated on a number of institutions (Roy 1984), the problems of political control and moral purity drew the upper classes of New York and Boston into a censorship crusade.

CENSORSHIP AND CITY GOVERNMENT IN BOSTON AND NEW YORK

In 1872, Comstock voiced concern about the availability of obscene pictures and books on New York City streets to the leaders of the YMCA, who called a meeting of prominent businessmen and founded the New York Society for the Suppression of Vice (NYSSV). The NYSSV sponsored legislative efforts at the federal and state levels and New York state anti-obscenity laws were strengthened as a result. Congress responded to Comstock by passing a law in 1872 that forbade the use of the postal service for mailing obscene matter and made Comstock the Postal Inspector. Comstock traveled extensively, arresting persons who distributed obscenity through the mail and urging groups in other communities to form anti-vice committees and sponsor anti-obscenity laws.

The success of Comstock's efforts, and of later efforts by the New England anti-vice society, can be attributed in part to the wealth and prestige of anti-vice supporters. High status was not confined to a few members; an examination of a random sample of financial contributors to the New York and New England anti-vice societies shows that over 80 percent of those listed in the City Directories had occupations that Thernstrom (1973, p. 290) called "high white collar," meaning upper or upper-middle class, including merchants, businessmen, bankers, and professionals (Table 1).

The NYSSV attacked a variety of issues during its first twenty years. Comstock targeted abortionists, becoming the first effective enforcer of the anti-abortion laws passed during the 1850s and 1860s (Mohr 1978). He arrested the publishers and vendors of pornographic books that bore titles such as *Confessions of a Lady's Waiting Maid* and *Adventures of a Sofa* (Library Company, undated). Having eradicated the most common street pornography, Comstock struck at improper reading matter, indecency in art, and gambling.

The campaign against pornography extended to all publicly available reading material. Changes in printing technology in the mid-nineteenth century made cheap books available

to the public. This generated a flood of story papers and "dime" and "half-dime" novels, mostly romance and adventure stories, some intended for children (Johannsen 1950). While these publications were not indictable as pornography, Comstock attempted to arouse public opinion against them, arrested dealers of literature that he deemed obscene, and tried to have some papers banned from the mails (NYSSV 1880; NYSSV 1888; Wanamaker to Leeds, Leeds vol. 5, p. 53).

Comstock developed his ideology about the effects of obscenity on children during the early years of the anti-obscenity crusade. Pornography, he argued, produced disastrous effects, and children from the "best" families were not immune. Novels were making youths vapid, lazy, and defiant (NYSSV 1880, p. 11). While syphilis was a real threat to public health in the nineteenth century, the dangers of masturbation that Comstock alluded to were largely in the public mind (Dubois and Gordon 1983; Freedman 1982; Neuman 1975). The NYSSV argued that improper reading material bred criminality among poor children, but emphasized the menace to upper class children. The NYSSV posed the problem of obscenity as a problem of class reproduction:

Our agent says, "I have found in the houses of the wealthiest and best families, in the hands of sons and daughters alike, the vilest books, pictures, and articles; and in some cases the son or daughter has been corrupted while in our best schools, seminaries, and colleges. Children of rich and poor, high and low alike, have been thus ruined. In one of the best public schools in Brooklyn, I found one of the worst books ever published, being circulated among the boys, and traced it into some of the best families in the city" (NYSSV 1877, pp. 7-8).

Although such arguments played on the anxieties of all parents, Comstock was particularly eloquent on the topic of pornographers sending their materials through the mail to children in elite boarding schools. Comstock emphasized that the primary means of spreading obscene material was through the purchase of lists of school childrens' names from postmasters, or selection of names from school catalogues. Tempting advertisements for obscene books were then mailed to the vulnerable youths (NYSSV 1875, p. 11). Such reading had terrible consequences:

There is scarcely a prominent school or seminary for either sex in our land in which there could not

Table 1. Percentage Distribution of Occupations of Male Contributors to the New York Society for the Suppression of Vice, 1872-1892, and the New England Society for the Suppression of Vice, 1885-1892

Occupation	New York	Boston
<i>Upper and Upper Middle Class:</i>		
Merchant, commercial importer ^a	11.4	19.2
Owner of manufacturing or extractive industry	12.2	16.4
Corporate official	12.8	8.5
Banker or broker	13.1	7.1
Judge or lawyer	9.9	6.4
Physician	5.5	2.1
Clergy	3.5	7.8
Publishers	3.8	3.6
Social registrant or millionaire, occupation unknown	3.5	10.6
Lives in wealthy area, Occupation unknown ^b	2.3	2.8
Other upper middle class occupations	5.5	7.8
Percentage in upper classes	83.5	92.3
<i>Other Classes:</i>		
Merchants and owners of single partner firms, possibly upper middle class ^c	9.0	4.3
Lower middle class	5.0	1.4
Skilled working class	1.7	2.1
Semi-skilled and service workers	0.6	—
Total men reporting occupation	343	141
No occupation listed	(15)	(15)
Multiple entries in directory ^d	(63)	(16)
Women	(37)	(40)
No information ^e	(142)	(20)

^a This category represents partners in firms with multiple partners, or single owners who are millionaires, in the *Social Register*, or who live in a wealthy area (see b below).

^b In New York City includes Fifth Ave., Madison Ave., Lexington Ave., Broadway, Park Place, Park Ave. In Boston includes Mt. Vernon St., Commonwealth Ave., Beacon St., Joy St.

^c Merchants and owners of single partner firms, not millionaires, not listed in the *Social Register*, and not living in a known wealthy area.

^d This refers to instances where two or more men with the same name were listed in the city directory. When this happened, the subsequent years when the person contributed to the anti-vice society were checked to see if one person with the same occupation and/or address could be isolated.

^e The large number of contributors not listed in the New York city directory, *Social Register*, or millionaire's list are most likely from out of town. Comstock did not consistently list the towns where people were from, so those not living or working in New York could not always be excluded. Of the persons not listed in the city directory, 29 names included the title "Reverend" and seven the title "Doctor," occupations of persons likely to appear in the city directory if they lived or worked in the city. The large number of ministers suggest that church networks created national support for the anti-vice movement, even though clergymen were not leaders of the NYSSV.

Note: Data from a random sample of the 1283 persons listed as contributors to the NYSSV and the 523 persons who contributed to the NESSV. The NESSV did not list contributors in their *Annual Reports* until 1885. Percentages are based on the total number of men whose occupations or status as social registrants or millionaires could be determined. Most of these men are residents of the cities; however, some lived outside of the city and worked in it. Occupations are coded from the city directories for the first year the person contributed. Coding categories are similar to Thernstrom (1973, p. 290-92). Women were excluded because, if married, only husbands' names and occupations were listed in the city directories.

be found if an exhaustive search were made, more or less of this literature familiarity with which enfeebles the mind, destroys the body, and ruins the souls of its victims (NYSSV 1876, p. 15).

Thus Comstock appealed to upper class parental anxiety. No place was safe. Children on the street could be approached by pornography vendors; children sent to elite schools in little country towns were targeted as well (NYSSV 1877, p. 8; NYSSV 1878, p. 7; NYSSV 1884, pp. 7-8).

Protecting elite children led to policing the content and distribution of elite culture. Beginning in 1879, Comstock reported that booksellers were marketing English translations of "classic" literature from Italy and France, including abridged editions of Boccaccio consisting of erotic descriptions and accompanying illustrations. Comstock argued that untranslated classics might be appropriate for gentlemen's libraries but translations were not for public newsstands.

These works, heretofore carefully concealed from public view, and kept by booksellers to meet what some consider the legitimate demand of the student, or gentlemen's library, are now advertised and sold by certain parties as "rich, rare and racy" books, "amorous adventures," "spicy descriptions," "love intrigues on the sly," etc... The Board has refrained, thus far, from touching these things, notwithstanding... (that) they are clearly illegal when so prostituted from what heretofore has been thought their proper and legitimate place (NYSSV 1879, p. 16).

Comstock's endorsement of such reading for gentlemen was never enthusiastic, but he was adamant that such literature should not be circulated in English, and particularly not to children.

Comstock blamed foreigners and immigrants for the tide of obscenity. The source of pornography was "the importation of criminals from other lands," an assertion Comstock justified by citing the high proportion of NYSSV arrests among the foreign-born (NYSSV 1876, p. 11). Although it was Irish, and not French, immigrants who were swelling the city's population, Comstock appealed to nativist sentiments by condemning French literature and art as "a foreign foe" (Comstock 1887, p. 4). This rhetoric linked problems of upper class reproduction to immigrants, criminals, and foreign culture. The ties between vice and immigrants became more glaring in 1880, when Comstock began to campaign against gambling.

In mobilizing support for the attack on gam-

bling, Comstock addressed several different concerns about class reproduction. First, Comstock appealed to businessmen's financial interests by arguing that young men from good families were so infected with love of gambling that they stole from their employers to support their habit (NYSSV 1880, pp. 11-12; NYSSV 1882, p. 16). By arguing that gambling was protected by corrupt police and "an organized financial and political ring" that held power in city politics, Comstock appealed to elite political interests. Comstock turned to the state government for help in combatting city corruption, enlisting the aid of New York's governor, Alonzo Cornell, who helped Comstock successfully prosecute gamblers (NYSSV 1882).

Finally, Comstock argued that gambling rendered upper class children unfit to take their parents' place as the leaders of business and society. Corrupted children were squandering their parents' fortunes at the gambling table (NYSSV 1891, pp. 15-16). Referring to gambling dens, he says:

The laws against the crimes we fight must be enforced, if you would save our youth from crime, our homes from sorrow and shame, the community from the dangers and burdens that a vast army of criminals necessarily bring. If you would preserve our sacred institutions in the future, you must save the youth of to-day. From their ranks come the men of to-morrow.

For any political leader or official to make a league with these crimes for personal gain, is *infamous*. But to make such a league for party preference, thereby jeopardizing the interests of society, defying the laws and trampling underfoot the Constitution of the State, is practically *high treason*, and should be punished accordingly (NYSSV 1882, p. 16).

In 1875, Comstock met with the Monday Morning Ministers Meeting in Boston. The group funded Comstock's travels to Boston to arrest pornographers, and in 1878 founded the New England Society for the Suppression of Vice (NESSV). The New England anti-vice society, like New York's, was an elite organization whose officers included the presidents of Yale, Brown, Amherst, and Dartmouth, and the leaders of Boston's most elite churches, Edward Everett Hale and Bishop Phillips Brooks (NESSV 1879-80). By 1882, the organization had hired its own agent for investigating violations of anti-obscenity statutes and refused to give more funds to the NYSSV (Minutes of the Executive Committee of the NESSV, hereafter

Minutes, May 1, 1882).

In spite of this show of independence from Comstock, the New England Society for the Suppression of Vice was plagued in its early years by Comstock's success at clearing Boston's streets of obscenity. The NESSV *Annual Report* of 1879-1880 claimed that the "grosser forms" of obscenity had already been eliminated from the city, although they still found objectionable books and papers to remove from newsstands (NESSV 1879-80, p. 3). The minutes of the Executive Committee, as well as the annual reports of the society, depict an organization looking for an issue. The organization supported their agent's "unremitting scrutiny" of shop windows and campaigns against masturbation and subway graffiti; but the malaise of the organization was reflected in the chairman's frequent failure to attend meetings (NESSV 1882-83, p. 1; NESSV 1879-80, pp. 2-3; *Minutes* April 4, 1881, April 13, 1881, June 11, 1882, March 5, 1883, May 7, 1883). The decision in 1882 to suppress a new edition of Walt Whitman's *Leaves of Grass* started the society on a career of literary censorship, but the turning point for the survival of the organization came in January of 1883 when the Society attempted to close the Royal Gambling Club on Tremont Street (*Minutes* Dec. 4, 1882 and Jan. 1, 1883).

The directors of the NESSV assumed that the police would cooperate with them in their campaign against gambling. In February of 1883, they met with the Police Commissioners to discuss the best way of proceeding against gambling houses (*Minutes* March 5, 1883). By the end of the year, however, the directors were disgusted with the police and the police commission, and submitted an affidavit to the Court asserting that the actions of the Boston police created contempt for justice and that the police should be "required to assist instead of resisting or thwarting those who endeavor to secure the enforcement of law" (*Minutes* December 17, 1883).

The directors of the anti-vice society continued their public crusade against the police administration in 1884, calling in their *Annual Report* for "radical and thorough" reforms, and discussing at length police obstruction of their attempts to raid gambling houses (NESSV 1883-84, pp. 3-4). The Annual Report also recounted the following from their meeting with the Police Commissioners:

On that occasion the Chief Commissioner said that raiding the gambling houses would only result in

driving out the "honest gamblers," and bringing in those who would play a "skin game." His opinion was that the result of a more vigorous enforcement of the law against gamblers would be a reaction; that gambling would continue, and the most that could be done was to regulate it; indeed, it was no worse than many other employments,—buying stocks on margins, for example; and that many of the gamblers were good and honest men. There was, in short, no word of condemnation for the proprietors of common gambling houses, while much was said in regard to the wrongdoing of other people; and, although he assured us our warrants should be faithfully served, the agent could not refrain from asking him how we could expect the officers to execute the law according to our ideas, while such was the sentiment of the Commissioners (NESSV 1883-84, pp. 12-13).

Warrants were obtained, but the NESSV learned that all the gambling houses in the city had been closed, with the explanation that "a little bird flew over the city two hours before" (NESSV 1883-84, p. 13).

The directors' frustrations mounted. By autumn, the NESSV had joined with the Law and Order League in an attempt to give the Governor control over Boston's police force (*Minutes* Sept. 8, 1884). Under this plan, police commissioners would be appointed by officials of the state government who were mostly native-born Republicans, rather than by officials of the city government who were mainly Irish Democrats. Members of the NESSV Executive Committee testified at a hearing of the state legislature in support of this legislation (*Minutes* Jan. 5, 1885). The legislation passed, and remained a source of tension between Boston's native-born and Irish for decades (Blodgett 1984).

These attempts at municipal reform may explain why the NESSV shared a significant number of members with the Boston's civic reform association, the Citizen's Association of Boston. Twenty-six percent of the members of the anti-vice society also contributed to the Citizen's Association in 1889, the first year that the latter organization published their list of supporters. Tackling the issue of gambling gave the anti-vice campaign direction and funding. Contributions, which had languished at \$617 for the year ending in March 1882, rose to \$1777 for the year ending March 1884 (NESSV 1881-82, p. 3; NESSV 1883-84, p. 15).

In both Boston and New York, the anti-vice campaigns led to governmental reforms pitting the power of state governments, dominated by the native-born, against immigrant-dominated

city governments. The data support an explanation of moral reform based on class conflict, and the intensity of class conflict may explain the widespread support for the anti-vice societies found among the upper classes. Table 2 shows that of Boston households that were listed in the *Social Register* and contained millionaires, 37 percent contributed to the anti-vice society. Of Boston households that were in the *Social Register* but did not contain a millionaire, 7 percent contributed, and of households with a millionaire but not listed in the *Social Register*, 10.5 percent were contributors to the NESSV. In New York, smaller proportions of these elite groups supported the anti-vice society, but households that were both in the *Social Register* and had millionaires were most likely to support the anti-vice effort in both cities.

ANTI-VICE ACTIVITIES IN PHILADELPHIA

In contrast to the mobilization of a powerful anti-vice society with numerous elite supporters in Boston, Comstock's efforts in Philadelphia were mostly fruitless. By 1877, Comstock had discontinued anti-vice work in the city, complaining that even the most notorious offenders there, who distributed pornography next to Girard College (a school for orphans), received insignificant sentences and fines (NYSSV 1877, p. 12).

Philadelphia produced an indigenous crusader in the form of Josiah Leeds, a rich and convinced Friend. Leeds began his anti-obscenity campaign in 1884 with efforts to get objectionable publications off newsstands located on the grounds of the city hall. His efforts were supported by both the Baptist and Presbyterian Minister's meetings (Leeds vol. 2, pp. 88-89). Leeds expanded his work the following year, lobbying for legislation prohibiting the sale of obscene literature in the city. Leeds was assisted in these efforts by George J. Scattergood, a member of Philadelphia's most prominent Quaker family. Scattergood's membership on the Committee of the Representative Meeting of the Religious Friends for Pennsylvania, Delaware, and New Jersey may explain why this group sent a petition to the Philadelphia City Councils urging them to pass legislation suppressing "demoralizing literature" (Leeds vol. 3, p. 8). Baltzell's assertion that Quakers were unwilling to legislate morality is clearly contradicted by this group's actions.

Table 2. Percentage of Elite Households who Contributed to the Anti-Vice Society, by Segment of Elite

Segment of Elite	New York		Boston	
	Percent	N	Percent	N
Millionaire and in <i>Social Register</i>	17.9	(598)	37.0	(102)
Millionaire, not in <i>Social Register</i>	4.6	(480)	10.5	(114)
In <i>Social Register</i> , not millionaire	4.0	(5918)	7.0	(1243)

Note: Numbers in parentheses are N's for percentages.

Source: *Social Register*, New York City, 1892; *Social Register*, Boston, 1890; "American Millionaires," *Tribune Monthly*, June 1892.

While Leeds' attack on obscenity was similar to efforts in Boston and New York, Leeds never attempted to rid Philadelphia of gamblers, the issue which led both Comstock and the NESSV to confront corruption in City Hall. Instead, Leeds devoted his anti-vice efforts to obscene theater posters, the ballet, "demoralizing" newspapers, and the distribution of obscene tobacco advertisements. In 1890, Leeds made a feeble move against "gambling" by attacking newspaper-sponsored "guess coupons," contests which awarded prizes to people who picked the winners of a series of sporting contests. Thus, Leeds attempted to use the law against newspaper publishers, a fairly wealthy and influential group, certainly higher in the class structure than the proprietors of the gambling houses targeted in Boston and New York (Leeds vol. 6, p. 58).

The campaign against newspaper lotteries was one of several instances in which Leeds was more willing to attack the vices of the wealthy than those of the poor. This propensity probably resulted from his being a plain Quaker, meaning one opposed to all displays of wealth, and could hardly have endeared him to potential upper class supporters. Leeds was convinced that displays of nude statues and paintings in store windows were partially protected by public knowledge that rich people collected such art, yet he was supported by the upper class when he campaigned against an exhibit of French paintings, which included nudes, hung at the Philadelphia Academy in 1891 (Leeds to Biddle, Leeds vol. 3, p. 89). In a letter to the *Philadelphia Inquirer*, Leeds stated:

It is occasion for great regret that the "Jury of Selection and Hanging" of the Philadelphia Academy should have taken the new departure they

appear to have done in placing pictures on public exhibit, which, were they to be exposed in any of the ornate drinking saloons of this city, would seriously imperil the application of their proprietors before the Board of Licensing Judges. The Academy authorities cannot have seriously considered, I think, the encouragement which they hereby give to the exposures of vulgar and indecent prints on the public thoroughfares (March 23, 1891 in *Leeds* vol. 6, p. 108).

This time, Leeds' complaint was supported by the wealthy matrons Mrs. William F. Biddle and Mrs. Samuel Clements. Biddle and Clements wrote to the Academy's Hanging Committee, claiming to represent the sentiments of 500 women, including many stockholders in the Academy, who perceived the paintings as "an attack on the delicacy of our daughters and the morality of our sons" (*Bulletin* March 9, 1891 in *Leeds* vol. 6, p. 106). A director of the Academy, who was no doubt more worried about patronage than about Leeds, conceded that some of the paintings were inappropriate, and promised that the problem would not recur (Coates to Leeds, quoted in the *Philadelphia Inquirer* March 23, 1891 in *Leeds* vol. 6, p. 108). It is not clear what effect this protest had on the display of nudes in Philadelphia, but the immediate effect of this incident was that the Academy was mobbed by people trying to see the objectionable pictures ("Protests Against the Nude," undated in *Leeds* vol. 6, p. 108).

This protest by upper class women shows that Philadelphia possessed the potential constituents for a censorship movement. A purely normative theory of moral reform, which would contend that Philadelphia's upper class had different values than the upper classes of Boston and New York and thus would not support literary and art censorship, is not supported by the historical data.

LEEDS AND THE CITY GOVERNMENT OF PHILADELPHIA

If Philadelphians' values do not explain their feeble support of Leeds, then we must look elsewhere for an explanation of the relative failure of censorship in Philadelphia. I argue that the answer lies in the lack of political and social power wielded by Philadelphia's immigrants compared to their brethren in Boston and New York. Philadelphia's matrons supported Leeds' campaign against nudes in art galleries, but he never mobilized upper class support by

attacking corruption in city government. His relations with city government officials were not always to his liking and deteriorated over time, but he had more influence with the city government than did the officers of the Boston and New York anti-vice societies.

Mayor Smith cooperated with Leeds' campaign against theater posters, and Leeds used influence with the mayor and city councilmen to get laws against obscene materials passed (Smith to Leeds, *Leeds* vol. 3, p. 103; Leeds to John H. Graham and Thomas Meehan, *Leeds* vol. 2, p. 111; Scattergood to Leeds, *Leeds* vol. 2, p. 109). Leeds' confidence in the mayor was best expressed in 1885, when he lobbied for a law (which he subsequently amended) that would have empowered the mayor to license newsstands and remove objectionable articles from them (*Leeds* vol. 3, p. 35).

In 1887, Mayor Fitler was elected as the candidate of Philadelphia's civic reform organization, the Committee of 100. Leeds' easy access to city hall appears to have ended with Fitler's election. The following year, Leeds complained bitterly when the Superintendent of Police would not remove obscene posters from in front of the Chestnut Street Theater (*Christian Statesman* May 24, 1888 in *Leeds* vol. 4, p. 81).

In 1890, Leeds complained about Fitler in the *Christian Statesman*, arguing that the "notorious" American Opera Company had performed without police interference because Fitler was a director of a city theater (December 18, 1890 in *Leeds* vol. 6, p. 84). Because the Committee of 100, a group representing the upper and upper middle classes, supported Fitler, it is unlikely that Leeds' complaints about Fitler's theater would have aroused elite sympathies (Gillette 1970; Teaford 1984, p. 194). Even though Leeds, like Comstock and the NESSV, argued that the city government was failing in the war against vice, the political situation of Philadelphia differed from that of New York and Boston in ways that undermined anti-vice efforts.

Philadelphia was not free of political corruption, nor did it lack organizations trying to eradicate it. To the contrary, Philadelphia's "Gas Trust" was notorious among civic reformers. Philadelphia differed from Boston and New York in that city government remained dominated by native-born Republicans throughout the nineteenth century (Erie 1988). While the upper classes of Philadelphia, as in Boston and New York, complained that the "best people"

no longer had power in city government, the elite was more active in Philadelphia's government than in the other cities'. In 1895, 39 percent of Philadelphia's councilmen were listed in the city's bluebook, a directory of the elite that listed about 10 percent of the city's families. In Boston, where 15 percent of the city's families were in the bluebook, only 8 percent of the city councilmen were listed, and the proportion for New York was even lower (Teaford 1984, p. 36). This had several consequences for Josiah Leeds and Philadelphia's upper class. Leeds was able to get stringent anti-obscenity laws passed, but the lack of an immigrant-dominated city government made the upper class of Philadelphia more complacent about vice in their city (Steffens 1903). Corruption in Philadelphia's city government meant that the native-born quarreled among themselves about city services, and those who made fortunes from service contracts and public monopolies were native-born rather than Irish (Gillette 1970). Philadelphia's upper and middle classes maintained control of city government, benefitted from city services, and acquiesced to political abuses (Gillette 1970).

One could attribute Leeds' failure in Philadelphia to his inadequacies as a leader. However, an examination of Comstock's final attempt to mount an anti-vice campaign in Philadelphia indicates that Leeds' idiosyncrasies were not responsible for the reluctance of the Philadelphia elite to support an anti-vice movement. Comstock's efforts are significant because, while Leeds sometimes appeared to attribute the presence of obscenity in shop windows to its presence in upper class parlors, Comstock was more careful with potential patrons, specifically distinguishing art for the upper class from art for the commoner (Beisel 1989; Comstock 1887). If Philadelphia's wealthy would not support Comstock it seems unlikely that Leeds' anti-elite attitudes were the cause of upper class indifference, or that his incompetent leadership led to the movement's failure.

Comstock made a last attempt to establish a Philadelphia branch of the NYSSV 1885. Before arriving in Philadelphia, he wrote to Leeds that "strong political influences in favor of this vileness" were inhibiting anti-vice efforts, and he recruited people sympathetic to such views to the organizational meeting of the new anti-vice society (Comstock to Leeds, *Leeds* vol. 3, p. 37). Eight of the 33 people, or 24 percent, who signed Comstock's call to found an anti-vice

society were also members of the Committee of 100, an overlap between civic and moral reform agencies similar in magnitude to that in Boston. However, while Boston's elite was well represented in the NESSV, only two of Comstock's supporters in Philadelphia were in the *Social Register* and none was a millionaire. This feeble response to Comstock indicates that elite indifference to anti-vice efforts transcended the issue of Leeds' Quakerism. Comstock's return to Philadelphia resulted in few arrests, and he conceded the field to Leeds (NYSSV 1886, p. 9; NYSSV 1887, p. 12; Comstock to Leeds, *Leeds* vol. 4, p. 51).

CULTURE, POLITICS, AND CLASS FORMATION IN PHILADELPHIA

Two interpretations can be attached to the finding that campaigns against corruption in city government increased the popularity of the anti-vice societies. One is that the NYSSV and NESSV were led by clever men who, realizing that the upper classes were upset about city government, linked obscenity to municipal corruption to generate support. This implies that the anti-vice societies' simultaneous concern about the content of culture and the corruption of city government resulted from the calculations of movement entrepreneurs (Becker 1963). This view implies that these concerns were not linked in any meaningful way, nor did the upper class really care about obscenity.

I argue an alternative view, that the upper class of Philadelphia faced a smaller, less miserable, and less well-organized immigrant working class than did the upper classes of Boston and New York and consequently were slower to adopt cultural institutions for reproducing their class position. Philadelphians did not have to confront the possible adverse effects of cultural institutions such as high art and elite schools on upper class children. The relative security of Philadelphia's upper class thus eliminated an important incentive for supporting censorship efforts.

Little evidence supports the interpretation that the campaign against gambling was calculated merely to generate support. Instead, the NYSSV appears to have stumbled into this issue when, in 1879, one of its leaders caught an employee stealing from him in order to buy lottery tickets. From the beginning, Comstock highlighted gambling as a threat to upper class children and to upper class social position

(NYSSV 1880, pp. 12-13). While Comstock probably recognized the advantages of tying gambling to the anti-obscenity campaign, his rhetoric suggests that appeals to the preservation of upper class social position, and the definition of political corruption as a threat to upper class families, resonated with existing concerns of New York's upper class.

Similarly, although anti-vice leaders in Boston met with Comstock and paid him \$600 for his services in 1879, they did not become interested in gambling until 1883 (*Minutes* April 29, 1879; NYSSV 1880, p. 20). At the beginning of the gambling crusade, the NESSV praised the police for their cooperation (NESSV 1882-83, p. 3). The argument that the NESSV took on gambling as a ploy to generate public support is also not consistent with the evidence.

There is evidence that support for anti-vice societies was related to upper class attempts to use cultural institutions to secure their position. Philadelphians erected the Philadelphia Museum of Art, a museum comparable to the Boston Museum of Fine Art and the Metropolitan Museum of Art in New York, more than two decades after the Boston museum moved to its present location on the Fenway. The growth of the Metropolitan Museum of Art also far outpaced that of the Philadelphia museum (Burt 1977; Howe 1913; Jaher 1982; Miller 1966; Roberts and Roberts 1959; Tomkins 1970). The practice of sending sons to exclusive boarding schools—in part to escape the vices of the city—also arrived later in Philadelphia (McLachlan 1970, p. 214). Baltzell reports that Philadelphia's scions were sent to these schools beginning in the 1910s, while the growth of these schools fueled by the arrival of Boston's and New York's upper class sons, was greatest in the 1890s (Baltzell 1958; Domhoff 1971; Jaher 1982; McLachlan 1970, p. 343).³

The nature and size of the immigrant communities of Boston, New York, and Philadelphia suggest that Philadelphia's upper class was least threatened. The 1890 census reported that 80.5

percent of New York City's white population were either foreign-born or had immigrant parents. In Boston, 68 percent of the white population were first- or second-generation immigrants, while the corresponding figure for Philadelphia was 57 percent (United States Department of the Interior 1895, p. clxii). More important for political and social outcomes in the cities was the geographical distribution of immigrants. Boston's immigrants were more concentrated in ethnically homogeneous districts. By 1890, eight of Boston's 25 wards were more than 40 percent foreign-born; in Philadelphia only four of 33 districts had such high concentrations of immigrants (Billings 1895, pp. 116-119; Burstein 1981). Boston's immigrants were crowded into miserable tenements, with an average of 8.3 persons living in each dwelling in 1880, while in Philadelphia, the "city of homes," the figure was 5.8. (United States Department of the Interior 1883; Sutherland 1973). Slums took a grim toll of immigrant lives, with immigrant death rates for every age group in Boston exceeding those in Philadelphia between 1885 and 1890 (Billings 1895, pp. 5-6; Meckel 1985). Finally, Philadelphia's immigrants, particularly the Irish, were less concentrated in unskilled laboring occupations than were their counterparts in Boston (Clark 1973a; Greenberg 1981). The occupational distribution of Philadelphia's Irish community may explain its division between the Democratic and the dominant Republican parties, which kept the Irish from being a major force in city politics until the twentieth century (Clark 1973b, pp. 141-42). This evidence suggests that the formation of upper class institutions in Boston and New York, as well as the success of the anti-vice societies, was related to the size and strength of their immigrant communities.

CLASS COHESION AND CENSORSHIP

While the political impotence of Boston's and New York's upper classes provided the impetus for consolidating cultural and symbolic power within the upper class, this process required some agreement about what the symbols should be. The greater cohesion of the Boston upper class enhanced the success of censorship. While the Boston and New York anti-vice societies were similar in that they both confronted the issue of city corruption, the reports of the organizations are strikingly different, and suggest that differences in the upper classes of the cities

³ Anti-vice leaders had more than a passing interest in elite education. Groton, one of the country's most prestigious prep schools, was founded in 1884 when Phillips Brooks, vice president of the Boston anti-vice society, suggested to Endicott Peabody that he start a boarding school (Solomon 1956, p. 47). Brooks then served as president of Groton's board of trustees. J.P. Morgan, a founder of the New York Society for the Suppression of Vice, was also a Groton trustee (McLachlan 1970, p. 251; NYSSV 1876).

shaped anti-vice agendas. The leaders of the New York anti-vice society repeatedly voiced concern about the reproduction of elite values. The reports of the NYSSV contain long justifications of their activities, particularly their efforts to censor art and literature. Censorship aroused less controversy in New England, where persons who sold works by Boccaccio, Balzac, Whitman, and Ovid were arrested along with the purveyors of common pornography. The explanation for this difference, I suggest, is that the upper class of New York was more fragmented than the elite of Boston, resulting in conflict over upper class values and lifestyles.

Comstock enjoyed widespread support for his war on pornography, but encountered a new enemy when obscenity dealers began issuing English translations of classic literature and prints of nude paintings. Dealers gained some support from the public by arguing that they were merely distributing art. Comstock was forced to confront the fact that some of the city's best families owned books whose sale he would prohibit on the street, and some decorated their homes with art he considered indecent (Broun and Leech 1927). Comstock struggled to differentiate obscenity owned by the wealthy from that available to the commoner:

So "art" and "classic" are made to gild some of the most obscene representations and foulest matters in literature, regardless of their results in immature minds. The natural outgrowth of corrupt minds of past ages, they are reproduced, and instead of being confined within the narrow restrictions of the "art gallery" or "museum," they are now paraded before the eyes of the public, flaunting their shame indiscriminately, whether youth are debauched or not. "Fine art" has lent its charms to pictures of lust, intensifying their power for evil, and finding an apology for them before the public (Comstock 1967, p. 168).

In contrast to the reports from New York, the annual reports of the NESSV are generally shorter and tend to be factual statements of the society's activities. The reports of the Boston society do not contain elaborate ideological justifications for anti-vice work, diatribes about art, or anxiety-arousing revelations about threats to the reproduction of the upper class.

The difference in the cohesiveness of the upper classes of the cities may explain their differences in anti-vice society rhetoric. This was, in part, a matter of sheer size—in 1892, New York City was home to 1,368 millionaires, Boston to 216 (*New York Tribune Monthly*

1892). More important was New York's role as a mecca for newly minted millionaires who spent lavish sums on yachts, stables of race horses, and extravagant parties in an attempt to buy social acceptance (Jaher 1973). The "Four Hundred," a group that regularly adorned Mrs. Astor's ballroom, craved publicity (and marriages to impoverished European nobles) but contributed relatively little of their vast fortunes to philanthropy and the arts. The clique was scorned by most of those with older fortunes. Thus, the upper class of New York was fragmented, with separate groups dominating economic, political, social, and cultural life in the city (Jaher 1973). The fragmentation of New York's upper class made the formation of upper class culture more contentious, which was particularly problematic in an era when the institutions of high culture were being established. The Metropolitan Museum of Art remained an institution separate from the venerable New York Historical Society because the trustees of the latter institution considered the pedigrees of the founders of the Met too unfashionable; similarly, the Metropolitan Opera was founded when Vanderbilt was unable to buy a box at the Academy of Music (Jaher 1982, pp. 270-71).

The only criticisms Comstock ever made of the upper class allude to this fragmentation and resentment of the newly wealthy. Comstock aimed his barbs at "fashionable society" (1967, p. 245). In an early defense of art censorship, Comstock argued that "pure minds" or "a noble character" are not made by "elegant dress, lavish expenditure, proud position, and arrogant ways" (Comstock 1967, p. 183). Comstock's complaints appealed to the snobbery of old money and attributed moral inadequacy to the new, perhaps fairly since the Four Hundred have been credited with popularizing French Salon nudes in the United States (Richardson 1965). While addressing the annual meeting of the NYSSV, the Reverend Charles Parkhurst chided critics of the Society, and linked the morality of upper class children to their parents' taste in art, saying:

The readiness with which they take sides when anything is brought up in the way of criticism upon this Society, and ally themselves on the side of filth, is, indeed, amazing. I find in the houses of persons connected with my congregation, pictures on the wall that I would not look at after the rest of the family came in... I am not speaking of simple nudity. I am talking about pictures that cultivate the most diabolical animal instincts in the mind of

the beholder. The Bible gives us to understand that men and women are to be clothed. There is to-day, in the homes of the "best families," what are called "works of art," but which I call obscenity. In them women are stark naked. What are you going to do, with these scenes prevailing in the very centres [sic] of society? How can these parents expect to do the work of the Lord Jesus Christ, with these agencies working their hellish influences in the minds of the children? (NYSSV 1888, pp. 32-33).

This is the most scathing attack on the art of the wealthy that appeared in the *Annual Reports*, and, significantly, it was not made by Comstock or an officer of the NYSSV. Parkhurst's godly calling probably permitted this scolding of his flock.

Conflicts about upper class culture in New York may explain another important difference between the New York and New England societies. The latter group devoted more time to philanthropic efforts aimed at the poor, specifically to campaigns against prostitution. Instead of struggling over upper class art, the Bostonians attempted to make sexual impropriety less available to respectable young men and women.

The problem of working class sexuality harming upper class youth arose in discussions of skating rinks as well as in campaigns against prostitution. While prostitution was portrayed as a threat to young men in the city's colleges, NESSV leaders argued that public skating rinks encouraged the "promiscuous mingling of all classes" which caused "the saddest instances of seduction and ruin," and successfully petitioned the reformed Police Commission to close a rink that had not dealt with this problem adequately (NESSV 1884-85, p. 8; NESSV 1886-87, p. 6; *Minutes* April 5, 1886). These campaigns against skating rinks and prostitution suggest that greater cohesion within the upper class of Boston left their anti-vice society free to address lower class threats to the reproduction of their class. Comstock also attributed the corruption of upper class children to immigrants, but he was more concerned about the effects of art and pornography on elite children than about the potential for sexual relations between these children and lower class prostitutes and seducers. In contrast to the upper class of New York, the upper class of Boston knew what sexual values their art and literature should promote — they refused to open the Boston Museum of Fine Arts until all the statuary was outfitted with fig leaves (Whitehill 1970, p. 31). The difference in upper class consensus about the content of art was

exemplified in 1896, when MacMonnies' statue, "Baccante and Infant Faun," commissioned for display in Boston's Public Library, was driven from town by Bostonians who found the depiction of a nude and intoxicated woman dancing with her infant an affront to decency and motherhood. The statue was moved to New York, where it was given a "place of honor" in the entrance hall of the Metropolitan Museum of Art (Clapp 1972).

Cultural conflict in New York's upper class may explain the greater success of censorship in Boston. The Watch and Ward Society exercised a virtual stranglehold on the availability of literature in Boston until the late 1920s, with booksellers petitioning for approval of the Society before displaying potentially objectionable (and indictable) volumes. In contrast, censorship efforts in New York became increasingly anachronistic (McCoy 1956).

DISCUSSION

I have explained variation in elite support for censorship in Boston, New York, and Philadelphia as the result of varying problems of upper class reproduction. Motivated by pressure from a large and politically powerful immigrant working class, the upper classes of Boston and New York supported anti-vice societies, municipal reform, and institutions that insulated them from their social inferiors. However, censorship also required consensus within the upper class about what would be censored. Fragmentation of New York's upper class generated more controversy about censorship, and ultimately less control over art and literature, than was exercised by the upper class of Boston. This analysis suggests that class-based and culture-centered approaches to moral reform movements are not mutually exclusive, and that an adequate understanding of these movements involves consideration of the ways in which culture is linked to class.

I have argued that much of the literature on twentieth-century moral reform movements does not explain the rise of anti-vice societies because it neglects or denies the origins of moral reform movements in class conflict. What does an analysis of censorship in the nineteenth century tell us about moral reform in the 1980s? First, this analysis demonstrates the necessity of understanding how ideological appeals made by movement leaders reflect problems facing the social class or class segment supporting the

movement at that historical moment. This implies that theories that refer to "cultural fundamentalism," a set of values supposedly held by a rural middle class a century ago, obscure issues. The rural middle class was already being eroded in the nineteenth century and the family farm faces extinction in the twentieth century. That members of some industrial classes are mobilizing to defend the values we attribute to nineteenth century farmers does not mean that these classes or class segments are fighting against cultural modernism. Instead, it means that these people are threatened by changes wrought in the 1970s and 1980s, and to understand moral reform movements we must examine these changes. This approach suggests that the cultural values of a class are of great importance to its members, particularly when parents perceive these values to be important to their children's maintenance of the family's class position. Actions to maintain these cultures reflect an interest as "real" as material interests.

The family is a recurring focus of conflict between classes and class segments because of its importance in reproducing the culture that in turn reproduces class position. However, the mobilization of the upper class into anti-vice societies in the nineteenth century also raises the issue of why twentieth century censorship organizations are not also dominated by the upper class. The attempts of the upper class to form institutions to shield and isolate their offspring from the influence of social inferiors appear to have been successful, leaving the upper class with no particular incentive to join the family protection movements of the 1980s.

The study of the anti-vice societies prompts reconsideration of how the relationship between class and status has been treated in the moral reform literature and in sociological theory. First, it raises the empirical issue of whether upper class reactions to immigrants represent "class" or "status" conflict. Because the industrial revolution in the United States was made with immigrant labor, one could argue that the formation of anti-vice societies represented ethnic rather than class conflict. But opposing class to ethnic conflict misses the important issue—the interaction of class and ethnicity in shaping upper class actions. The theory that class dynamics are shaped by an internal economic logic has been increasingly challenged in favor of asking how ethnicity, gender, and culture shape class formation and class action (Somers 1989; Wright, Howe and Cho 1989).

The interdependence of class and status has long been recognized, prompting the empirical question of how the relationship between these attributes has varied over time (Bendix 1974; Collins 1975; Goffman 1951). To argue that class dynamics are solely economic while status concerns encompass ethnicity and culture artificially separates class from culture.

Historical studies of the actions of social classes show that class and culture are mutually dependent. Recognizing that cultural socialization is linked to class position, that cultural markers are used in the allocation of economic goods, and that classes struggle over the symbols that reproduce their economic position, grants class and culture interdependent roles in explaining social phenomena.

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DISARTICULATION AND HUMAN WELFARE IN LESS DEVELOPED COUNTRIES*

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Disarticulation refers to the juxtaposition of economic sectors with different levels of development and productivity. Disarticulation is hypothesized to have a negative effect on social well-being, net of economic development, because it inhibits the spread effects generally thought to be associated with economic growth. Findings are in accord with this hypothesis, although the relationship is complex. The strongest effects of disarticulation are found among the poorest nations. The concept of disarticulation opens a new and promising avenue of research that may help to resolve contradictory findings of recent research on the political economy of growth.

Economic growth in less developed nations is a means to an end, the end being the improvement of mass welfare. There is a consistent and demonstrable link between economic growth and human welfare, but there is also considerable "slippage" between economic development level and even very basic measures of mass welfare such as infant mortality, longevity, literacy, educational levels, and nutrition. We argue that "disarticulation," a distorted form of economic growth typical of many less developed nations, can account for much of this slippage.

BACKGROUND

The relative lack of correspondence between development level and welfare, particularly among less developed nations, is quite striking. Shin (1975), for example, has shown that only about 20 percent of the variation in infant mortality, perhaps the most sensitive measure of general welfare, can be accounted for by development level. Burma, with a per capita gross national product of less than \$200, and Sri Lanka, with less than \$400 per capita gross national product, are among the poorest of the world's nations and yet have longevity and infant mortality measures comparable to those of Brazil and Mexico, with six to ten times the per capita gross national product (World Bank 1988). Such misfits between development level

and human welfare are as much the rule as the exception (Hicks and Streeten 1979).

The bulk of research investigating the link between economic development and its social concomitants has concentrated on income distributions. This is true of both the more traditional neo-classical approach in economics and of recent sociological studies in dependency and world system theory. Income distributions are important for evaluating the effects of economic growth on welfare, but suffer from serious problems with data validity, and more direct measures of welfare are needed.

Neo-classical approaches to explaining the lack of fit between development level and income distribution are dominated by Kuznets' (1955) and A.O. Hirshman's (1958) theses that the relationship is curvilinear. Nations embarking on economic development first experience a surge of inequality as those employed in the lead growth sectors enjoy increased incomes, while workers elsewhere in the economy do not. Continued growth draws ever larger numbers of workers into more productive and better-paid modern sector employment, gradually reducing income inequality.

Research by developmental economists appears to provide some support for this thesis. When the per capita gross national product for a sample of nations is plotted against various measures of inequality, the poorest nations approximate the relatively equal income distributions of the richest nations, while nations between these extremes tend to display far higher levels of income inequality (Paukert 1973). Rubinson (1976), on the other hand, found no such pattern, and Adelman and Morris' pivotal

* We would like to express our appreciation to the Social and Demographic Research Institute of the University of Massachusetts, for resources and support provided during the course of this research.

study of growth and equality (1973) concluded that development level had only a secondary and minor bearing on equity.

Even if we accept a curvilinear relationship between development and income equality, there are several reasons to question its optimistic implications for the peoples of the Third World. First, the curvilinear relationship depends heavily upon the inclusion of the developed nations, which are high both on measures of development and on income equality. There is a wide dispersion of inequality scores at lower levels of development, suggesting that the relatively high levels of equality observed in rich nations may be a function of some common factor other than development, such as position in the world economy, a shared cultural heritage, or other factors.

A second reason to doubt that development is the sufficient cause of increasing equality is that historical studies that trace changes in income distribution within a country over time are contradictory and equivocal. Soltow's study of Norway (1965) appears to show equality increasing with development, but his study of England (1968) does not. Routh's (1965) analysis of income distribution in Great Britain between 1906 and 1955 finds no trend, curvilinear or otherwise. Most such studies (Kuznets, 1962; Miller, 1966) concentrate on the years after the first World War and while they frequently find some improvement in income distribution, the progress is discontinuous and not clearly related to economic growth.

Recent research within the dependency tradition casts further doubt on the notion that economic growth among less developed nations will increase equality (Bornschieer and Chase-Dunn 1985; Robinson 1976; Chase-Dunn 1975; Bornschieer, Chase-Dunn, and Robinson 1978). These studies generally conclude that development under conditions of dependency, i.e., an excessive reliance on external capital and external trade, has a regressive effect on equality. Dependency is seen as creating a small local elite, allied to international capital, whose fortunes are tied to the export of raw and semi-processed goods produced with external capital. Local industry is stunted and there is little growth of an indigenous middle class. The bulk of the population, apart from a small "labor aristocracy" and the co-opted local elites, continues to subsist at extremely low income levels. While the data are generally in accord with this account, this research has several drawbacks.

First, while it is reasonably certain that dependent growth produces relative increases in inequality, the reasons are far from clear. Second, the theoretical links that tie the two together rest on an increasingly inappropriate model of less developed nations. The model for most such work is the classical "banana republic," a non-industrial economy dominated by traditional elites and devoted to the export of agricultural and mineral products. While some countries still fit this image, the spread of industrial production has made them less common.

Evans and Timberlake (1980) have attempted to deal with these shortcomings by demonstrating that dependency causes relative increases in inequality through its impact on economic structure. Their analysis shows that capital dependency is related to disproportionate growth in the tertiary, or service, sector. They argue that foreign capital tends to stimulate capital-intensive industry, which is very productive, but which provides relatively few jobs. At the same time, the resulting urban development creates a powerful "city lights" effect, drawing people from the neglected and impoverished rural sectors into urban areas where they are only marginally employed in the service sector. Because the service sector intrinsically has a wide income distribution, the net effect of dependency is to promote income inequality. Similar conclusions appear in Evan's analysis of dependent development in Brazil (1979) and in the work of Furtado (1969).

The basic insight of Evans and Timberlake is that dependency widens the gaps between those sectors of the economy which benefit from the stimulus of external capital and those which do not. This notion is drawn in a simplified and truncated form from the work of Samir Amin (1974, 1976) and, we believe, is essentially correct. A more complete specification of the relevance of Amin's ideas for understanding the link between economic growth and human welfare is presented below. Before taking up this topic, however, some discussion of the practical and theoretical shortcomings of using income distributions as an index of the social impact of economic growth is in order.

Income distribution data are notoriously incomplete and riddled with error. Most current work draws on the compilation by Jain (1975), made for the World Bank. As Jain notes, these data were collected by different techniques, in different time periods, and for differing pur-

poses. Some are only rough estimates. No more than a handful of the income distributions reported for Third World countries can be accorded anything approaching the confidence required for sophisticated statistical analysis.

Furthermore, income distributions may not be the best index to gauge the effects of economic growth on human welfare. In most less developed nations, noncash income, such as from subsistence production and barter, is of pivotal significance in determining welfare. In addition, the governments of less developed nations vary widely in the degree to which they subsidize the welfare of their populations through health care, education, basic foods subsidies and other benefits. For these reasons, it seems preferable to utilize direct measures of human welfare.

DEVELOPMENT AND SOCIAL WELL-BEING

Spurred by a growing concern with "basic needs," a number of indices of social welfare are regularly tabulated by international agencies, including poverty rates, caloric intake, availability of health care professionals, educational enrollments, mortality statistics, employment levels, access to safe water, and others. Much of the research in this area consists of efforts to create a reliable composite index of basic needs satisfaction (Cutright and Adams 1984; Dixon 1984; Larson and Wilford 1979; Morris 1979; Estes 1984). While certain of these indices, such as Morris' Physical Quality of Life Index (PQLI) and Estes' Index of Net Social Progress (INSP), have been fairly widely used, there are reasons to be skeptical about the utility of such indices for research on the effects of development. First, there is considerable debate about the particular items that should be included and their relative weights (Hicks and Streeten, 1979). Second, the constituent items of any such index are of sufficient individual importance that merging them into a composite measure represents a serious loss of information.¹ This is particularly true in light of the possibility that different components of basic needs satisfaction vary in response to different dynamics.

The present research focuses on three widely reported and generally accurate components of social well-being. First, and probably most important, are statistics pertaining to infant and child mortality. The child mortality rate is a sensitive indicator of the general level of nutrition, health, and healthcare. A second measure with fairly accurate and complete data is the crude death rate. Finally, the percentage of the appropriate age group enrolled in secondary education is a useful measure of the effort being put into general welfare. These three measures constitute a rough profile of the well-being of the population in the Third World.

Expectations concerning the relationship between economic development and direct measures of human welfare are not clearly specified in the literature, apart from a general belief that economic growth has a beneficial effect. The view in developmental economics that trends in income distribution follow a curvilinear path with development is not necessarily applicable to direct measures of social welfare. Dependency theory is likewise vague about the effects of economic growth on welfare. Because dependency concentrates income in the upper classes, dependency interacts with development level. At high levels of dependency, development has little positive effect on human welfare because elite groups monopolize the fruits of growth. At lower levels of dependency, growth should have broader positive effects on welfare.

Empirical work linking dependency and social well-being is scarce and contradictory. Lenski and Nolan (1984) and Nolan and White (1983) found peripheral status to be detrimental to infant mortality and life expectancy. Sell and Kunitz (1987) found debt dependency retarded gains in life expectancy, but that *rates of increase* in debt per capita had the opposite effect. Bullock (1986) found that investment dependence and per capita foreign aid *lower* infant mortality. London and Williams (1988), in perhaps the most intensive recent analysis of the link between dependency and basic needs satisfaction, used a more complex measure of foreign capital penetration and found a generally *negative* effect on the Physical Quality of Life

¹ Estes' INSP, for example, consists of 41 indicators, including such diverse and potentially contradictory factors as women's status, political stability, and "defense effort." It is thus very difficult to interpret. Morris' scale (PQLI), at the other extreme,

consists of only three items: infant mortality, life expectancy, and literacy. All three reflect aspects of life worthy of separate analysis, and combining them into a single scale loses more information than seems justified by the slight increase in convenience.

Index. On the whole, then, studies coming out of the dependency perspective have not established a general consensus about the nature of the link between dependency and social well-being.

DISARTICULATION

The work of Samir Amin provides a theoretical orientation consistent with dependency theory, but more cohesive and comprehensive, and which may also resolve several contradictory findings. Amin (1974, 1976) argues that many less developed nations suffer from a structural distortion he terms "disarticulation," characterized by weak or missing links between economic sectors. Any integration occurs via the world economy rather than through internal exchanges. Disarticulation thus consists of the juxtaposition of economic sectors with radically different levels of development and productivity. The developed sector, typically producing for export, utilizes modern and highly productive techniques, monopolizes available capital, and is the source of dynamism within the economy. Underdeveloped sectors utilize traditional and labor intensive techniques and typically are not export-driven. While this division usually is between the industrial and the agricultural sectors, this need not be the case. Because of the different levels of development across the various sectors of the economy, internal exchanges are sharply constrained. Developed sectors are unable to utilize extensive inputs from the traditional sector, while traditional sectors lack the resources to provide a significant market for the developed sectors.

According to Amin, disarticulation is a result of "extraversion" and the infusion of foreign capital. Extraversion refers to the domination of an economy by an external market orientation. The roots of extraversion in less developed nations date back to the earliest entry of these countries into the world economy. Nearly all currently less developed nations entered the world economy as suppliers of primary products to more developed nations. The developed nations first drew upon existing production of the indigenous economies, and later reorganized production to better suit their needs. During this process, export sectors experienced significant growth, while most other sectors lagged behind or stagnated.

The acceleration of direct foreign investment since the Korean War further widened the gaps

in productivity between the export and nonexport sectors, and heightened disarticulation.

The consequences of economic growth under conditions of disarticulation are the focus of this research. *The essential hypothesis is that disarticulation has a negative effect on general welfare, net of the effects of development level.* It is also possible that disarticulation and development interact to modify the effects of development on human welfare.

In general, disarticulation inhibits the broad positive social transformation ordinarily thought to be associated with economic growth. The developed sectors may experience growth as demand increases, but the inputs to support increased production are apt to be supplied externally, thus truncating both domestic multiplier and accelerator effects. Other sectors of the economy tend to experience little increase in employment, prosperity, or productivity. Bergsman (1979) found that a measure of "dualism," operationalized as the ratio of productivity in industry to that in agriculture, had a close negative relationship to income shares going to the poorest 40 percent of the population in 10 semi-industrialized nations. Adelman and Morris (1973) report similar findings concerning the effects of dualism on income distributions.

There are three specific mechanisms by which disarticulation is likely to lessen the effect of growth upon human welfare. First, disarticulation is apt to vitiate the relationship between productivity and wage levels, and between growth and labor force expansion. Wages in the traditional sector are of necessity low, given the low productivity of labor. The presence of large numbers of low-wage workers exercises a depressing effect on wages in the more productive sectors. Productive sectors need pay only a small premium over the wages prevailing in the unproductive sectors in order to attract the most skilled and productive workers. Wages *can* be low in productive sectors because they *must* be low in unproductive ones. Thus, to the extent that real wage increases stemming from improved productivity are the ties that bind improved human welfare to economic growth, disarticulation is apt to weaken this relationship. Furthermore, the tendency of disarticulation to constrain growth within a limited number of sectors, and for this growth to be relatively capital intensive, should result in relatively small increases in total employment per increment in national output.

Second, growth under conditions of disarticulation tends to reduce governmental social activism. One means by which growth is presumed to improve general welfare is that it makes greater resources available for direct public spending on human welfare. There are several reasons why disarticulation makes it less likely that public funds will be devoted to such purposes. Most importantly, disarticulation reduces the economic incentive for the polity to engage in direct income transfer or to enact legislation that would have that effect. Disarticulated economies are outwardly oriented: the world economy, specifically the core states, is the primary source of both inputs and outputs for the developed sectors. As a result, labor is a "pure cost," meaning that wages paid to domestic workers are not a significant source of demand (See De Janvry and Sadolet, 1983, for a similar analysis).

In developed economies, in contrast, the domestic market is the key dynamic and it is vitally important that domestic demand remain sufficiently high to prevent economic stagnation. Governments in the developed nations are therefore drawn into a wide variety of social programs designed to stave off lagging effective demand and underconsumption, including minimum wage legislation, protection of trade unions, unemployment insurance, health and welfare programs for the indigent, and fiscal and tax policies to shelter and stimulate lagging sectors of the economy. Since economic health in disarticulated economies rests upon external demand, there is far less purely economic incentive for governments to support or increase the consumption capacity of the general population. There are, of course, a wide variety of political and humanitarian incentives to do so. London and Williams (1988), for example, argue that legitimization needs in the face of political instability may result in increased welfare expenditures. Other things being equal, however, governments in disarticulated economies are likely to be less active socially than governments in less disarticulated economies. This will, in turn, reduce the rate at which economic growth is translated into improved social well-being.

Although this construction has never been directly tested to our knowledge, work by Jackman (1975) designed for other purposes suggests it has some validity. Jackman found a strong positive relationship between an (inverted) Schutz coefficient of sectoral inequality

in productivity and the SIPE scale, a measure created by Cutright (1965) to assess the extent of government provision of welfare services. Jackman regarded sectoral inequality of productivity as a proxy for income inequality, and thus concluded that low levels of governmental welfare intervention increase inequality. From our perspective, Jackman's analysis suggests the opposite, that disarticulation tends to reduce the level of governmental activism.

Finally, growth under conditions of disarticulation tends to produce what Amin refers to as "hypertrophy of the tertiary sector," meaning excessive and disproportionate growth of service sector employment. Amin provides a more comprehensive theoretical account of the finding of Evans and Timberlake (1980) that dependency, as measured by levels of foreign investment, stimulates excessive growth of service sector employment. It is this growth, according to Evans and Timberlake, that explains the oft-noted link between dependency and inequality.

As noted above, Amin argues that the modern sector in underdeveloped countries attracts the great bulk of available capital, both domestic and foreign, as well as the most solicitous attention of governmental policy makers. The agricultural sector, apart from those enterprises linked to export activities, is left stagnant and unproductive. Population growth in rural areas exerts a powerful downward pressure on productivity, often reducing the absolute output per capita. At the same time, craftspersons in both rural and urban areas are devastated by competition with imported goods and modern sector domestic production.

The elephantine cities of the Third World become the foci of aspirations for a better life, attracting dispossessed craftspersons and redundant rural workers. Most subsist in a marginal social and economic position as domestic servants, street vendors, day laborers, and the like, where they are frequently tabulated as "service sector workers." Evans and Timberlake's finding of a link between foreign investment and growth of tertiary employment is, we believe, a reflection of this more general process of disarticulation. Foreign investment results in hypertrophy of the tertiary because it creates disarticulation.

It is plausible that equivocal research findings regarding the relationship between dependency and basic needs satisfaction can be explained by the prior relationship between dependency and

disarticulation. According to Amin, the roots of disarticulation are capital and export dependency. Rather than being the direct cause of lowered basic needs satisfaction, dependency may exert primarily indirect effects by producing disarticulation. If capital and export dependency in a given case do not produce disarticulation, there may be no measurable effect. This is a complex problem and, although briefly explored in the following analysis, is best treated separately.

The preceding considerations suggest a rather complicated model of the relationship between economic growth and human welfare. The key question, however, is the degree to which disarticulation explains the divergence between economic growth and human welfare.

DATA AND METHODS

There are five variables in the analysis: child death rates, crude death rates, secondary school enrollments, development level, and disarticulation. Because the effects of development level and disarticulation are felt only after some time lapse, they are measured at an earlier point in time than the well-being measures. Given data constraints and the results of some preliminary analysis, 1978 was selected as the appropriate year for measuring the independent variables, while 1983 was the most recent year for which relatively complete data on the dependent variables were available.

Data were collected for all countries classified by the World Bank as low- and middle-income as of 1978. Because of incomplete tabulations of data for smaller countries, nations with less than one million population were excluded. Also excluded were most planned economies because data for these nations are generally not compatible with those from market and mixed economies. Finally, we excluded capital surplus oil exporters. This was done primarily because their inclusion would bias the analysis toward support of our central hypotheses: such countries are uniformly high in disarticulation and per capita income, but relatively low in most measures of general welfare. After these exclusions, and a number of others due to missing data, 62 nations remained for analysis.

Child mortality rates, crude death rates, and secondary school enrollments for 1983 were taken from the *World Development Report 1987* (World Bank 1988). Child mortality rates are expressed as the number of deaths per 1,000

children aged one to four. Crude death rates represent total deaths per 1,000 population. The secondary school enrollment rate is the percentage of children in the appropriate age group enrolled in secondary schools. Means and standard deviations for all variables are shown in Appendix B.

Development level was taken from the *World Bank Tables*, Third Edition (World Bank 1983) and is measured as gross national product per capita. Several other measures of development, including electric energy use per capita and gross domestic product, were examined during preliminary analysis and produced substantially similar results.

The pivotal measurement for this analysis is *disarticulation*. Amin provides little guidance for constructing an empirical measure of disarticulation. The measure adopted here compares the distribution of workers and national product across economic sectors. The absolute differences between the percentage distribution of the labor force and the percentage distribution of national product were summed over all sectors of the economy to yield our measure of disarticulation. This approach reflects a broad picture of the entire economy.

Data on productivity by sector were drawn from World Bank reports (World Bank 1983) supplemented by United Nations statistics. Gross domestic product by industry is reported for nine sectors: (1) agriculture, (2) mining (including petroleum and natural gas production), (3) manufacturing, (4) construction, (5) utilities (electricity, gas, and water), (6) transportation and communications, (7) trade and finance, (8) public administration and defense, and (9) "other." These were collapsed into seven categories by merging categories 6, 7, and 8 into a single "services" category to bring the classification into line with more conventional use and to match the available labor force distribution. Data for the distribution of the labor force were drawn from the International Labor Organization publications (1987).

Appendix A lists disarticulation scores for the 62 countries used in the analysis. Appendix B contains means, standard deviations, and a correlation matrix.

Previous research and various theoretical conjectures suggest that the effects of development may be nonlinear; i.e., a given increment in GNP per capita will have a greater effect on welfare measures at lower levels of development than at higher levels of development. All

three welfare variables are subject to floor or ceiling effects. Child mortality and crude death rates have floors beneath which they cannot fall (0) while secondary education enrollment has a ceiling at 100 percent. As they approach those limits, additional gains are harder to realize. Plots indicate nonlinearity is confined to the effects of GNP per capita, so GNP per capita is transformed to natural logs. Since the effects of disarticulation may be different at different levels of development, a classical case of interaction, we also estimate models that are both nonlinear and nonadditive.

Economic development and the mechanisms that translate development into welfare gains or losses are complex. Our models may be seen as limited and as involving specification error through the omission of important variables. However, empirical research on disarticulation is new and relatively little is known about the dynamic relations between it and various other variables. If effects are found with these simple models, disarticulation will have been given support as an important explanatory concept and subsequent research can take on the task of estimating with greater precision the causal mechanisms involved in translating development into welfare.

RESULTS

Table 1 reports the results of regressing the three welfare variables on per capita GNP (log) and disarticulation. In all three regressions, there is substantial improvement over equations (not reported here) in which the GNP effect is assumed to be linear. For the child mortality equation, the change in R^2 is from .424 to .601. The equation for the crude death rate improves from .503 to .642. The education equation goes from .540 to .614, the smallest gain of the three. The joint F tests on all three equations are highly significant. For each additional unit of GNP per capita (log), net of disarticulation, there are 8.45 fewer deaths per 1,000 children, 4.02 fewer deaths per 1,000 population, and a gain of 17.42 percentage points in secondary enrollment. In all three equations, there is a highly significant disarticulation effect, net of development level, and the effects are in the expected direction. For each unit increase in disarticulation, there are .16 more deaths per 1,000 children, .073 more deaths per 1,000 population, and a loss of 1/4 of a percentage point in secondary enrollment. The disarticulation hypothesis is strongly con-

Table 1. Linear Regression of Social Well-Being Measures on Development Level and Disarticulation for Less Developed Countries

Independent Variables	Social Well-Being Measures		
	Child Mortality	Crude Death Rate	Education Enrollment
Constant	56.139*** (7.699)	34.383*** (11.038)	-59.087*** (-4.229)
Development level*	-8.449*** (-8.286)	-4.016*** (-9.192)	17.425*** (8.883)
Disarticulation	.159*** (3.902)	.073*** (4.158)	-.257*** (-3.232)
Adjusted R^2	.601	.642	.614
S.E.	7.508	3.242	14.376
N	61	62	60

*** $p < .01$

*Measured by GNP per capita (log).

Note: t-values in parentheses.

firmed.

Because nonlinear equations have rates of change that differ at different locations on the curve, it is useful to calculate the rates of change at particular locations. This is a straightforward task because the derivative dY/dX for an equation where X is transformed to a natural logarithm is B/X , with B being the coefficient for $\log_e X$. Since the models are additive and the only other variable is disarticulation, which is linear and additive, disarticulation can be disregarded in calculating the derivative of Y with respect to $\log_e X$. This simple calculation shows both death rates experienced large effects at the \$100 per capita GNP level. At \$100, child mortality is falling at a rate of -.084 per dollar increase in GNP per capita. The corresponding effect for the crude death rate is about half that of the child death rate. At the \$500 GNP per capita point, the rate of decline in child mortality has slowed to -.017 and at \$1000, it is only -.008. Secondary educational enrollment is increasing dramatically at the \$100 level of per capita GNP (.174) but slows to .035 at the \$500 level and to .017 at the \$1000 level.

INTERACTION

Is the effect of disarticulation the same at all levels of development? Disarticulation is a relatively new and unexplored concept and the question of interaction is raised in an attempt to

Table 2. Linear Regression of Social Well-Being Measures on Development Level and Interaction Terms for Disarticulation at Four Development Levels for Less Developed Countries

Independent Variables	Social Well-Being Measures		
	Child Mortality	Crude Death Rate	Education Enrollment
Constant	46.882*** (3.835)	28.387*** (5.546)	-33.831 (-1.446)
Development level ^a	-6.939*** (-3.369)	-3.031*** (-3.791)	13.272*** (3.643)
Interaction between disarticulation and:			
GNP < \$500	.185*** (4.084)	.083*** (4.368)	-.289*** (-3.265)
GNP = \$500-\$999	.133** (2.620)	.081*** (3.810)	-.290*** (-2.997)
GNP = \$1000-\$1999	.099 (1.666)	.030 (1.202)	-.134 (-1.777)
GNP > \$1999	.162* (1.797)	.050 (1.321)	-.049 (-2.84)
Adjusted R ²	.603	.663	.618
S.E.	7.491	3.148	14.294
N	61	62	60

* $p < .10$ ** $p < .05$ *** $p < .01$

^aMeasured by GNP per capita (log).

Note: t-values in parentheses.

more fully understand and characterize its effects. Our attempts to model interaction have been informed by examination of the data. The interaction hypothesis is not an *a priori* hypothesis generated by theory or prior research. As such, our findings have a somewhat different level of support than would be the case had they been *a priori* hypotheses subsequently confirmed by the data. Nevertheless, the patterns are relatively clear and interpretable and they provide interesting points of departure for future research.

The pattern of interaction varies somewhat from dependent variable to dependent variable and with the way we model the interaction. Over all variables and all models, a single pattern emerges: *Disarticulation negatively affects welfare but the effects are more pronounced at lower levels of development.* As development level increases, the disarticulation effect is reduced until it disappears at development levels of per capita GNP greater than \$2000. The most straightforward way to model interaction be-

tween two continuous variables is to form a product term and estimate an equation containing the original variables [here, GNP per capita (log) and disarticulation] and the product term. Because the product term is highly collinear with its components and the data are poorly distributed in certain regions, the product term interaction model was not appropriate for these data. We estimated the interaction by constructing dummy variables representing categories of per capita GNP. Guided in part by the plots, we created four categories: less than \$500, \$500-\$999, \$1,000-\$1,999 and greater than \$1,999. The last two categories contain few observations, but there is variation on both GNP per capita and disarticulation and they are retained in the analysis. The disarticulation score is multiplied by each of the dummy variables to produce four product terms. The coefficients for the product terms can be interpreted as the disarticulation slopes within each specific level of per capita GNP. For each level of per capita GNP, the equation reduces to a model containing the constant, the development effect and the disarticulation effect for that specific development level. This specification permits us to estimate four models simultaneously, all having a common intercept and development effect but differing with respect to the effect of disarticulation.

The results are shown in Table 2. For child mortality, the first two of the four interaction terms are significant at .05 or below. Since disarticulation is permitted to have a different and larger effect in the low GNP categories, the development effect is not quite so precipitous as in Table 1. The interaction terms suggest the largest disarticulation effect is in the lowest category of GNP, where child mortality increases by .185 per 1,000 for each unit change in disarticulation. The coefficient drops to .133 for the next lowest development category. In the two top categories, the last category is marginally significant. Dropping the last two interaction terms, thus forcing the disarticulation slope to be zero for these categories, and re-estimating the equation results in a change in the adjusted R² of less than .01.

The crude death rate shows effects of slightly different magnitude. The effects for GNP per capita (log) and disarticulation in the lowest development group are about half of what they are for child mortality. Here, however, the decline in the disarticulation effect does not start until per capita GNP exceeds \$1000, at which

point the slope drops from around .08 to .03. Slopes for the two highest development categories are not significantly different from zero. Dropping them from the equation gives an adjusted R^2 that remains the same to 3 decimal places.

The education variable shows a similar pattern. Development level [GNP per capita (log)] continues to have a significant positive effect. The disarticulation slopes for the two lowest development groups are similar in magnitude and significant. The two highest development groups have disarticulation slopes that are not significantly different from zero. Dropping them causes the adjusted R^2 to increase by less than .01.

Other models of interaction were estimated. We experimented with different cutting points for the categories of per capita GNP and ran separate regressions for data in each GNP category, with and without development controls. While coefficients vary somewhat, the pattern remains the same. Disarticulation, net of development level, has a strong effect on all three measures of social well-being when development is low but these effects decrease at higher development levels.

Table 3. Linear Regression of Social Well-Being Measures on Development Level, Disarticulation, and Capital Penetration for Less Developed Countries

Independent Variables	Social Well-Being Measures		
	Child Mortality	Crude Death Rate	Education Enrollment
Constant	55.305*** (6.886)	34.793*** (10.525)	-43.215*** (-2.814)
Development level*	-8.727*** (-8.573)	-3.986*** (-9.375)	18.696*** (9.599)
Disarticulation	.148*** (3.738)	.073*** (4.387)	-.209*** (-2.721)
Capital penetration (log)	.374 (.576)	-.096 (-3.58)	-3.327** (-2.685)
Adjusted R^2	.634	.681	.661
S.E.	7.066	2.966	13.460
N	59	60	58

*** $p < .05$ ** $p < .01$

*Measured by GNP per capita (log).

Note: t-values in parentheses.

A final analysis considers an alternative account of basic needs satisfaction, namely, that dependency rather than disarticulation is the crucial determinant. London and Williams (1988) found that foreign capital penetration had a generally negative effect on three measures of social well-being. Although a full exploration of this topic is beyond the scope of the present paper, we re-estimated the equations in Tables 1 and 2 including their measure of capital penetration. This measure, which was created by Bornschier and Chase-Dunn (1985), is a weighted index of the stock of foreign capital (log) for 1967. The results, shown in Tables 3 and 4, are striking — in none of the equations was there any substantial change in the coefficients for disarticulation. Dependency, as measured by capital penetration, has only a marginal insignificant effect on the two mortality measures and a small but significant negative

Table 4. Linear Regression of Social Well-Being Measures on Development Level, Interaction Terms for Disarticulation at Four Development Levels, and Capital Penetration for Less Developed Countries

Independent Variables	Social Well-Being Measures		
	Child Mortality	Crude Death Rate	Education Enrollment
Constant	44.705*** (3.632)	26.362*** (5.160)	-27.240 (-1.109)
Development level*	-7.499*** (-3.766)	-2.586*** (-3.110)	16.063*** (4.048)
Interaction between disarticulation and:			
GNP < \$500	.175*** (3.940)	.091*** (4.879)	-.241*** (-2.657)
GNP = \$500-\$999	.096** (2.004)	.072*** (3.596)	-.224** (-2.346)
GNP = \$1000-\$1999	.093* (1.706)	.029 (1.286)	-.113 (-1.093)
GNP > \$1999	.184** (2.132)	.040 (1.106)	-.153 (-.894)
Capital penetration (log)	.769 (1.110)	-.133 (-.466)	-3.270** (-2.373)
Adjusted R^2	.656	.704	.653
S.E.	6.846	2.860	13.623
N	59	60	58

* $p < .10$ ** $p < .05$ *** $p < .01$

*Measured by GNP per capita (log).

Note: t-values in parentheses.

effect on secondary enrollment levels. On balance, this preliminary analysis suggests that the effect of disarticulation on basic needs is not an artifact of dependency but that disarticulation is the key intervening variable between dependency and the social outcomes of economic growth.

SUMMARY

The central question posed in this analysis was limited in scope. In light of the newness of the topic and lack of prior research, we primarily wished to determine if there is a relationship between disarticulation and social welfare as measured by child mortality, the crude death rate and secondary school enrollments. The answer is clear and unequivocal. Holding level of development constant, disarticulation is associated with increases in the crude death rate and the child mortality rate and with decreases in secondary enrollment. However, the effect of disarticulation depends in part on the level of development. In general, the disarticulation effects are strongest among the least developed countries. At higher levels of GNP per capita the effects of disarticulation gradually attenuate and finally become minimal at about \$2000 GNP per capita.

There are at least two major implications for future research in the political economy of development. The first is the possibility that the concept of disarticulation can clarify the rather confusing findings concerning dependency and the social consequences of economic growth. If Amin is correct, it may be that the key intervening mechanism is the degree to which dependency creates disarticulation. Preliminary analysis suggests this may indeed be the case, but further analysis is needed. The questions that need to be answered are: (a) under what conditions does dependency produce disarticulation; (b) does the inclusion of disarticulation as an intervening factor explain the links between dependency and basic needs?

A second implication of this research concerns the relationship between disarticulation and economic growth, and the resulting impact on satisfaction of basic needs. According to Amin, disarticulation directly inhibits economic growth, and disarticulated growth is characterized by a series of economic "miracles" followed by stagnation and economic collapse. The same disarticulated structure that creates some degree of economic growth also creates

barriers to genuine self-sustaining growth. Almost none of the richer less developed countries display high levels of disarticulation, supporting the notion that disarticulation is a barrier to growth. Clearly, the concept of disarticulation can be a powerful tool in the study of the political economy of development.

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Appendix A: Disarticulation Scores for Countries Used in the Analysis, 1978 (N=62)

Country	Disarticulation Score	Country	Disarticulation Score
Afghanistan	54.38	Madagascar	96.96
Algeria	96.42	Malawi	83.85
Argentina	62.50	Malaysia	53.75
Bangladesh	33.88	Mali	102.54
Benin	37.30	Mexico	61.34
Bolivia	57.73	Nepal	53.78
Brazil	74.62	Nicaragua	41.37
Burma	41.78	Niger	95.39
Burundi	47.71	Pakistan	42.32
Cameroon	81.76	Panama	73.51
Chile	71.23	Paraguay	34.69
Columbia	37.42	Papua N.G.	98.22
Costa Rica	36.65	Peru	60.98
Ecuador	56.23	Phillippines	59.22
Egypt	67.42	Portugal	52.42
El Salvador	18.87	Rwanda	90.00
Ghana	33.62	Senegal	96.96
Guatamala	63.85	Sierra Leone	56.63
Guinea	105.55	Singapore	31.15
Greece	51.67	Sri Lanka	31.90
Haiti	48.51	Syria	48.14
Honduras	57.58	Tanzania	69.03
Hong Kong	81.55	Thailand	62.88
India	45.42	Tunisia	76.76
Indonesia	38.65	Turkey	69.48
Israel	15.87	Uganda	19.27
Ivory Coast	117.34	Uruguay	37.90
Jamaica	67.89	Venezuela	58.73
Kenya	81.36	Yemen	63.02
Korea	38.67	Yugoslavia	66.14
Liberia	78.75	Zambia	108.95

of productive and consumptive activities away from traditional-family households was related to higher homicide rates.

The effects of these demographic changes may be confined to certain types of victims, however. A population skewed toward the teen and young adult years typically is assumed to have higher homicide rates by increasing "the relative frequency of interactions between motivated offenders and individuals leading highly victim-prone lifestyles" (Cohen and Land 1987a, p.174). If this opportunity mechanism links age structure and homicide rates, it seems unlikely to affect murders of children.

A second implication of the opportunity hypothesis is that the shift away from household activities will have its strongest effects on homicide rates for women and children. The most significant change in activity patterns is the movement of women into the labor force. The resulting reduction in guardianship should make women and children more vulnerable to murder.³ Because the activities of adult males will also be less closely supervised, their risks of murder also are likely to increase, though to a lesser degree. This leads to two predictions:

A higher percentage of teens and young adults in a population will significantly increase the homicide rate for adults, but children will be negligibly affected.

A higher percentage of households with working women will be associated with higher homicide rates for all persons, but women and children will be more strongly affected than men.

The Cultural Context

At the cross-national level, evidence of covariation between a variety of types of violence (Russell 1972; Archer and Gartner 1984) lends support to cultural explanations of differences in homicide rates. Some explanations assume that these associations reflect an underlying system of norms prescribing, or failing to proscribe, violence as a response to conflict (Straus

1983). Others contend that exposure to violence (whether direct or indirect) generates violence, either through modeling, habituation, or desensitization (e.g., Bandura 1973). According to modeling theories, exposure to violence that is legitimate, intentional, and real is most likely to elicit aggression (Comstock 1975).

The claims of normative and modeling approaches are consistent with evidence that officially approved violence, such as wars and executions, is often followed by elevated rates of illegitimate, interpersonal violence (Bowers 1984; Archer and Gartner 1984; Landau and Pfefferman 1988), and that rates of justifiable homicide covary with rates of criminal homicide (Williams and Flewelling 1988). The habituation argument is supported by Archer and Gartner's finding that post-war increases in homicide occurred most often in nations suffering large numbers of combat deaths during wars.

Differences in causal mechanisms aside, this literature agrees that where officially approved violence is prevalent, rates of criminal violence are higher. However, neither theory nor research provides a strong rationale for predicting different effects for different subgroups, therefore I predict:

Homicide rates will be higher for both sexes and all ages where the death penalty is legally sanctioned, and where involvement in wars has been more frequent and more deadly.

SAMPLE AND VARIABLES

Sample

The sample is 18 economically developed democracies observed at five-year intervals from 1950 to 1980. The unit of analysis is a nation-time period. The nations include Canada, New Zealand, Australia, Japan, the United States, and 13 western European nations. The analysis is confined to these nations because most macro-level models of homicide refer to the United States experience and are formulated in terms of social processes that characterize developed nations in modern times. Developed

³ One could argue that this shift away from household activities reduces the opportunities for homicides within the family, and thus should reduce the homicide rates of women and children relative to those for males, since a larger proportion of the former are family homicides. This seems to me to strain the concept of opportunity. Even were this the case, one would have to argue that the risks of family homicide have decreased enough to counterbalance

the increased risk of non-family murders of females and children. Since there is evidence to suggest that female labor force participation may increase motivations for the murder of women and children (Brown 1980; Fiala and LaFree 1988), this, too, seems unlikely.

tionary psychology (Daly and Wilson 1988), Marxism (Bonger 1916), and anomie theory (Durkheim 1951), economic stress resulting from the inadequate or unequal distribution of resources is a major contributor to high rates of interpersonal violence. While economic inequality has consistently been associated with cross-national variation in total homicide rates (Krahn, Hartnagel, and Gartrell 1986; see also Messner 1989), the inadequacy of resources may be a more general risk factor. Absolute deprivation increases the risks of various types of family homicide, including infanticide, as well as non-family homicide (Daly and Wilson 1988; Williams and Flewelling 1988). Government efforts to alleviate deprivation are associated with lower homicide rates for the population in general (DeFronzo 1983), and children in particular (Fiala and LaFree 1988).

Economic inequality, on the other hand, may have particularly strong effects on certain types of homicides. Typically, economic inequality is assumed to generate diffuse aggression and hostility that is expressed in irrational or "unrealistic conflicts" (Coser 1968). In contrast, and similar to Daly and Wilson (1988), I view these heightened motivations as rationally targeted. People typically kill those they feel most directly competitive with or threatened by, and for the relatively deprived this will be similarly situated others. Since most killers are adults, I expect that in conflicts between adults the sense of relative deprivation will be most likely to lead to homicide. This leads to the following predictions:

Where government efforts to provide a minimum living standard are more limited, and where income inequality is greater, homicide rates will be greater for both females and males, adults and children.

However, I expect that

the effects of income inequality will be most pronounced on the homicide rates of adults.

The Integrative Context

The capacity of a nation to provide control and protection against violence should be greater the more prevalent and interdependent are individuals' ties to social institutions, and social institutions' ties to each other. Japan's success at avoiding a post-1960s crime wave frequently is attributed to the strength of its group ties, made possible by the homogeneity of its population (Bayley 1976). In aggregate-level research on

homicide, a high rate of family dissolution is assumed to weaken inter-individual ties, while extensive ethnic or linguistic cleavages in a population are assumed to weaken inter-institutional ties. The former has been associated with intra-national variation (Williams and Flewelling 1988; Sampson 1986), and the latter predicts cross-national variation (Hansmann and Quigley 1982, McDonald 1976) in homicide rates.

Weakened social integration lessens social control and should increase most types of homicide. Divorce, for example, by reducing guardianship and control of both potential victims and offenders, will raise risks for everyone, rather than simply for members of disrupted families. Williams and Flewelling (1988) found that cities with high divorce rates have significantly higher rates of both family and non-family homicides. Weak inter-group integration, however, may be a stronger risk factor for murders of adults, compared to murders of children. If cultural heterogeneity taps the potential for conflict and an absence of control among groups (Blau 1977), murders of adults ought to be affected most, since they engage in more inter-group interactions than children. If cultural heterogeneity, like economic inequality, incites perceptions of threat and competitive hostility (Hansmann and Quigley 1982), this too may be channeled largely toward adults. Consequently, I predict:

Divorce rates and ethnic-linguistic heterogeneity will be associated with higher homicide rates for females and males, adults and children.

The effects of heterogeneity will be strongest for the homicide rates of adults.

The Demographic Context

Two demographic aspects of a population, its composition and its daily movements, are particularly important for the homicide rate. The younger a population and the more widely dispersed its activities, the less effective are social controls and the more extensive are opportunities for homicide. The post-1960s wave of violent crime that engulfed most western nations has been attributed, in part, to the aging of the post-war baby boom cohort into their late teens and early 20s (Gurr 1981). This account has received empirical support in time-series analyses of U.S. homicide rates (e.g., Cohen and Land 1987a). The same analysis found that the shift

social conditions assumed to shape the control of and motivation to homicide vary in their effects by type of homicide. While this should not preclude the search for a general model, it argues for greater attention to the heterogeneity of acts comprising the total homicide rate.

Only one cross-national analysis has attended to this issue. Fiala and LaFree (1988) test a model explaining child homicide rates that incorporates the traditional perspectives of social disorganization, culture of violence, economic distress, and opportunity. Only measures of economic distress predict variation in child murders in developed nations, leading them to favor a motivational model. However, because their model is restricted to children, it is not informative about whether social characteristics associated with the total homicide rate are also associated with rates for subgroups.

Implications for the Present Study

Macro-level research on homicide shows appreciable consensus about the causes of variation in homicide rates over time and place, despite a tendency in the literature to emphasize the inconsistencies in empirical findings or incompatibilities in theoretical approaches. Several elements of the social and cultural environment have consistently been implicated in the study of homicide. Each is assumed to have an indirect effect on homicide by raising motivations, lowering controls, and/or increasing opportunities for homicide.

However, this consensus is limited because most systematically formulated and tested models are based on the experience of the United States. The homicide rate in the United States is unique in that it is substantially higher, and its composition different from that in other developed nations. According to data from the Federal Bureau of Investigation, the majority of homicides in the United States involve strangers or acquaintances (rather than relatives), and the typical murder occurs between young males away from their households. In other developed democracies, homicides are more likely to be home-centered, and victims are more likely to be family members or females (Curtis 1974). Consequently, the indicators of motivations, controls, and opportunities derived from the U.S. experience may have quite different effects in other countries. For this reason, I analyze homicide rates disaggregated by sex and age of the victim, two characteristics highly correlated

with homicide rates in the United States.

How might the sex or age of the victim have implications for existing models? Some have argued that murders of women and children are more pathological, because they are less likely to be instrumentally motivated (Gelles and Cornell 1983). Homicide data suggest that women and children are more likely than adult males to be killed by family members or by someone dissimilar in sex or age (Curtis 1974; Gelles and Cornell 1983).² The social inequality between female or child victims and their offenders may render such violence distinctly different from violence between adult males. This point is emphasized in feminist literature on family violence (e.g., Guberman and Wolfe 1985) and is supported by the finding that, in the United States, rates of family homicide appear to have a somewhat different etiology than rates of non-family homicide (Williams and Flewelling 1988; Parker and Smith 1979).

Identifying the full range of differences underlying the motivation and control of male homicides and female or child homicides is an important task, but one beyond the scope of this paper. In the analysis that follows, I consider only how characteristics usually associated with total homicide rates vary by sex and age of the victim.

A MODEL OF VARIATION IN SEX- AND AGE-SPECIFIC HOMICIDE RATES

The characteristics of a population commonly associated with the homicide rate can be grouped into four categories, which constitute the exogenous structural and cultural contexts for homicide in my model. These include (1) the distribution of economic resources, (2) the integration of social networks and institutions of control, (3) the composition and activities of the population, and (4) exposure to official, legitimated violence. In combination, these factors structure the control of, and motivation and opportunities for, homicide in a population.

The Material Context

According to perspectives as diverse as evolu-

² This suggests that the principal of homogeneity developed in the victimization literature (Cohen, Kluegel, and Land 1981), and derived from U.S. experience should be qualified when considering murders of females and children.

sible mechanisms: motivations or controls. Motivational approaches focus on social conditions or processes that engender homicidal inclinations in a population. Examples include strain theories, such as Merton's anomie theory (1938), and cultural theories, such as that of Wolfgang and Ferracuti (1967). Motivational concepts drawn from strain theories have received considerable support in macro-level research. For instance, Blau and Blau (1982) found that economic inequality, both between and within races, is a significant predictor of homicide rates across metropolitan areas. They suggest that economic inequality "engenders alienation, despair, and pent-up aggression, which find expression in frequent conflicts, including a high incidence of criminal violence" (Blau and Blau 1982, p.126). A cultural orientation to violence is suggested by the finding that the prevalence of legitimate or official violence is associated with both cross-sectional and temporal variation in homicide rates (Williams and Flewelling 1988; Landau and Pfefferman 1988; Archer and Gartner 1984).

Control explanations focus on social conditions or processes that weaken informal and formal social controls. In Shaw and McKay's social disorganization theory (1942), communities with attenuated social networks cannot adequately supervise or socialize their members, leaving them free to engage in crime. With the recent re-emergence of community-level analyses of crime (e.g., Reiss and Tonry 1986), the control dimension of social disorganization theory is again framing numerous ecological studies. For example, Sampson has successfully used it to explain variation among communities in violent crime rates in England and the United States (Sampson 1986; Sampson and Groves 1989).

Opportunity Models of Homicide Victimization

Both motivational and control models are primarily concerned with explaining the behavior of offenders. Recent research on criminal victimization has shifted focus to the circumstances under which violent crimes are carried out. The most systematically formulated model of ecological variation in victimization is Cohen and Felson's (1979) routine activity approach. They argue that the homicide rate is a function of the opportunities for victimization, defined as the convergence of motivated offenders and suitable

targets in the absence of capable guardians. Because this convergence is expected to occur more often where people spend much time outside the home or away from family members, they predict homicide rates will be higher where daily activities are more dispersed. They found an indicator of dispersion (the residential population density ratio) to be related to post-war trends in U.S. homicide rates, net of the effects of traditional measures of motivations and controls (Cohen and Felson 1979).

Social control is the mechanism linking social structure to homicide rates in the routine activity approach (Cohen and Land 1987b). This perspective explains how the organization of daily activities allows criminal motivations to be realized, rather than how these motivations are generated within a population.¹ Thus, a routine activity model can account for increases in violent crimes in the United States during a period when many of the social conditions thought to foster violence were not worsening.

Recent Empirical Applications

The most recent efforts at modeling the distribution of homicide rates are concerned with the social production of motivations, controls, and opportunities (Cohen and Land 1987a; Devine, Sheley, and Smith 1988; Fiala and LaFree 1988). For example, in Williams and Flewelling's (1988) model, three exogenous constructs — social disintegration, resource deprivation, and violent cultural orientation — influence homicide rates indirectly through social controls and the intensity of interpersonal conflict. Measures of each of these constructs (divorce rate, percent living below the poverty line, and justifiable homicide rate, respectively) predict the homicide rate across 168 American cities during the early 1980s.

Noteworthy in the Williams and Flewelling study is their analysis of homicide rates disaggregated by victim-offender relationship and type of conflict. Similar to an earlier study (Parker and Smith 1979), they demonstrate that

¹ Similar to other control theories of crime (e.g., Hirschi 1969) the routine activity approach assumes motivations to crime in a population are constant and "at least partially explained by the lack of external restraints" (Cohen and Land 1987b, p. 51). Thus, while a pool of motivated offenders is a minimal element in homicide, explaining the existence of this pool is unnecessary.

THE VICTIMS OF HOMICIDE: A TEMPORAL AND CROSS-NATIONAL COMPARISON*

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This paper develops and tests a model of cross-national and temporal variation in homicide rates using sex- and age-specific victimization data from 18 developed nations for the years 1950-1980. The results indicate that the structural and cultural factors that explain homicide rates in the United States are also associated with sex- and age-specific homicide rates in other countries. Some factors, such as absolute deprivation and extent of official violence, are associated with higher risks across victim types. Others have effects that vary by the sex or age of the victim. For example, a measure of criminal opportunities has a significant effect on homicide rates of women and children, while economic inequality and cultural heterogeneity are associated with higher rates only for adults. Family dissolution is associated with higher risks for adults and older children, but not younger children.

Nations and eras vary widely in the extent to which they facilitate or inhibit criminal violence. Homicide rates in western societies appear to have declined over the last several hundred years, but more recently, they experienced sharp, short-term upsurges in the early 19th century and in the last two decades (Gurr 1981). Even over relatively brief periods, the risk of violent death can vary greatly: homicide rates in developed democracies averaged 60 percent higher in the late 1970s than in the late 1950s (World Health Organization, various years). Despite this general upward trend in criminal violence, there are substantial cross-national differences in the risk of being murdered. Throughout this period, homicide rates were 40 percent higher for Australians than for New Zealanders, 50 percent higher for Italians than for Swiss, three times greater in Norway than in Finland, and four times greater in the United States than in Canada.

In this study, I attempt to account for both recent trends and cross-national differences in homicide rates in developed democracies.

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Drawing on motivational, control, and opportunity explanations of homicide, I argue that a nation's homicide rate is shaped by four structural and cultural contexts: material, integrative, demographic, and cultural. Some aspects of these four contexts are relatively enduring and stable features of nations and are expected to account for cross-national differences in homicide rates, while others vary over time within nations and are expected to account for trends in homicide rates. Testing these expectations using data from 18 nations for the period 1950-1980 allows me to examine the generality of relationships derived from more limited studies.

Because the risk of murder varies not only across time and space, but also across subgroups of a population, I analyze homicide rates disaggregated by the sex and age of the victim. In the United States, where most models of variation in homicide rates have been tested, young adult males are substantially more likely to be murdered than females or children. This pattern varies somewhat among developed democracies, raising the possibility that existing models of the social causes of homicide may not account well for the murders of females or children.

THEORY AND RESEARCH ON HOMICIDE RATES

Traditional Approaches: The Motivation and Control of Homicide

Traditional explanations of variation in rates of violent crime have emphasized one of two pos-

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world-system perspectives: in the long run, the greater the penetration of non-core areas by the capitalist world-economy, the greater the privation of the majority in those areas.

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Appendix

Countries Used in the Analysis (N = 63)

Afghanistan	Malaysia
Algeria	Mali
Argentina	Mauritania
Bolivia	Mexico
Brazil	Morocco
Burkina Faso (Upper Volta)	Mozambique
Burma	Nepal
Burundi	Nicaragua
Central African Republic	Niger
Chile	Panama
Colombia	Papua New Guinea
Costa Rica	Paraguay
Dominican Republic	Peru
Ecuador	Philippines
Egypt	Rwanda
El Salvador	Saudi Arabia
Ghana	Senegal
Greece	Sierra Leone
Guatemala	Singapore
Haiti	Sri Lanka
Honduras	Sudan
Hong Kong	Syria
India	Tanzania
Indonesia	Thailand
Iran	Trinidad and Tobago
Iraq	Tunisia
Israel	Turkey
Jamaica	Uganda
Kenya	Uruguay
Korea, Republic of	Venezuela
Libya	Zimbabwe
Malawi	

Countries Excluded Due to Poor Reliability (N = 13)

Angola	Madagascar
Benin	Nigeria
Cameroon	Somalia
Chad	Togo
Ethiopia	Zaire
Ivory Coast	Zambia
Liberia	

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of developmental distortions through which MNC penetration might promote mortality than that given at the outset of this article. MNC penetration does not appear to promote mortality by slowing economic growth, by reducing per capita calorie supplies, or by obstructing progressive government health programs. Rather, previous research implies that at least part of MNC penetration's impact on mortality is mediated by its effect on income inequality; inequality in subsistence-generating resources such as land is also theoretically relevant. Hobcraft et al. (1984) find that Third-World childhood mortality is closely linked to parents' socioeconomic position, and Leipziger and Lewis (1980) find a positive correlation between income inequality and infant mortality in a cross-national analysis. Bornschier and Chase-Dunn's (1985, p. 124) cross-national study indicates MNC penetration promotes income inequality in non-core countries. The importance of material inequality for mortality is also implied in the theoretical arguments of Wallerstein (1983) and Gregory and Piché (1983).

Extreme material inequality impedes survival for those at the bottom of the stratification hierarchy, especially where material resources are as scarce as in most of the Third World. MNC involvement in the Third World appears to promote inequality in several ways. (1) Many MNC subsidiaries produce goods for sale within the host country — typically expensive goods, since inexpensive goods tend to have more competitive markets and therefore generate low profits, making it in the interest of MNCs that much of a poor country's income go to a small elite so that a market exists for MNC products (Bornschier and Chase-Dunn 1985, p. 122). (2) Inequality is also in the interest of MNCs producing for export because a low-wage labor force, which facilitates competitive pricing of exports, corresponds with high inequality levels (Moran 1978). (3) MNCs often have considerable influence over host governments through which they can implement these interests via such mechanisms as promises or threats of future investment or disinvestment, bribes, or cooptation of domestic elites. For example, MNCs may press for laws that inhibit labor union activity and may oppose increased minimum wages or other government action that would redistribute income to the poor (Moran 1978). (4) MNCs tend to use capital-intensive production techniques despite the excess supply of labor in the Third World. Since MNCs

typically draw heavily on host-country capital, they divert investment from uses that would more effectively reduce unemployment and underemployment (Moran 1978). (5) Similarly, agribusiness MNCs divert land from labor-intensive use by small-holders to large scale capital-intensive export production (George 1977). (6) As a key actor in the present-day capitalist world-economy, the MNC promotes the intensive growth of the world-economy in areas only partially incorporated in the world-system, leading to the semi-proletarianization (dependence on both wages and subsistence activity) of households that previously would have depended solely on subsistence activities for their survival. Because semi-proletarian households depend only in part on wages, the reproduction of their wage labor can be subsidized by subsistence activities, resulting in greater exploitation and immiseration than for purely subsistence households (Hopkins, Wallerstein, and associates 1977). Additional mechanisms through which MNCs may promote inequality are reviewed by Bornschier and Chase-Dunn (1985, pp. 142-46).

Unfortunately, direct empirical examination of the intervening role of material inequality in the MNC penetration-mortality relationship is difficult owing to lack of inequality data needed for a longitudinal study. Nonetheless, the best cross-sectional evidence on relations among MNC penetration, inequality, and mortality points directly to the conclusion that MNC penetration aggravates inequality, which is directly detrimental to mortality. This conclusion is also consistent with the theoretical and historical literature of the dependency and world-system perspectives.¹⁵

In contrast to Sowell's (1983, p. 241) diffusionist argument that the benefits of MNC investment entail some costs, for mortality the evidence suggests the reverse: the costs of MNC investment entail some minor benefits. The findings of this study as well as previous findings on economic growth and inequality support a fundamental claim of the dependency and

¹⁵ One reviewer contended that the key link between MNC penetration and poor quality of life is state social policy rather than material inequality. State policy may influence material inequality, but it may also influence basic needs satisfaction through such means as social welfare spending. Clearly, more research on state policy is needed to define its role in the MNC penetration-mortality relationship.

I will return. Aid dependence was added to the mortality models while controlling for health spending and physicians to determine if earlier negative findings were due to suppression, but aid dependence again failed to attain significance.

DISCUSSION

This study underscores Hicks and Streeten's (1979) influential critique of composite indexes of basic needs and London and Williams' (1988) finding that such indexes may be misleading. Though composite indexes may be useful in preliminary studies, reliance on them precludes finding important relationships among their components and important differences in the causes of these components. The present research identifies age-specific differences in the dynamics of the investment dependence-mortality relationship and even suggests that another quality-of-life indicator (school enrollments) may help account for these differences. These results do not imply that established overall mortality measures such as life expectancy at birth are valueless for assessing the total impact of investment dependence on mortality. However, this study in combination with those cited earlier certainly calls into question the utility of composite quality-of-life indexes which combine mortality with other dimensions of the quality of life. Several such indexes have been developed in recent years and have appeared in cross-national research. These include the Physical Quality of Life Index (PQLI), consisting of infant mortality, life expectancy at age one, and adult literacy (used by Dixon 1984 and others); and the Social Welfare Index, based on infant mortality, physicians per capita, and calories and protein per capita (used by Jackman 1975). Quality of life is a complex, multidimensional phenomenon and cannot be measured validly by such implicitly unidimensional composite indexes.

The fact that foreign aid dependence — measured here as debt incurred from foreign aid — has no effect on mortality does not contradict the finding that MNC penetration hinders reduction of mortality. Though the dependency and diffusionist literature on MNC investment and foreign aid dependence identifies similar

mechanisms by which the two forms of foreign investment may influence quality of life, there is no logical or empirical reason to expect similarly large effects for foreign aid and MNC investment on any one of these mechanisms. Indeed, the greater emphasis on MNC investment rather than foreign aid in the dependency literature implies a view of foreign aid as more benign than MNC penetration. The results here support the greater emphasis on MNCs found in the literature.

This is not to say that foreign debt has no relevance for mortality. The concern of this study is not with foreign debt generally, but rather with foreign aid dependence — bilateral aid in particular. Bilateral aid dependence differs substantially from other forms of debt in that such aid represents the direct involvement of core states in the affairs of recipient countries. Since the 1960s, however, the portion of Third World foreign debt incurred through bilateral foreign aid has declined substantially even as foreign debt as a whole has increased dramatically (Sell and Kunitz 1986-87). Bilateral aid debt may be a poor proxy for *total* debt, and to the extent that foreign debt has important effects regardless of the type of creditor, total debt may be a more important factor in mortality. Bello's (1989) cross-national investigation of the effects of total foreign debt finds some statistically significant detrimental effects on change in infant mortality from 1970 to 1980 — though not for life expectancy at age one — when GNP per capita, capital formation, and government spending on health and education are controlled. The effects of foreign debt might be more pronounced for the 1980s, a period for which reliable cross-national mortality data remain scarce. The Third World debt crisis became full-blown only in the early 1980s — an outcome of massive lending by core-based private banks in the late 1970s, spiraling interest rates, recession in the developed countries, and declining demand and prices for Third World exports. The response of many debtor nations was reduction of wages and social spending, trends apt to undermine improvements in mortality (Green 1987, pp. 99-117). Further cross-national research is needed on the effects of debt, especially when more recent mortality data become available.

This analysis shows that MNC penetration promotes high mortality levels in the Third World, but a major question remains: *Why* is MNC penetration detrimental to mortality? New evidence presented here suggests a shorter list

are from the Food and Agriculture Organization (various years) and Borschier and Chase-Dunn (1985), respectively.

thus outweighs its indirect beneficial effect.

That MNC penetration promotes greater spending on health contradicts previously discussed implications of dependency/world-system theory but is congruent with other literature written from this perspective. Wallerstein (1983, p. 101) writes that infants in producer households (as opposed to capitalist households which survive by extracting surplus from producers) "are more likely to survive the first year of life (because of the effect of social hygiene undertaken to protect the privileged)" than in past centuries. The continuing penetration of the capitalist world-economy into the non-core — represented here by MNC investment penetration — results in public health measures (e.g., sanitation) that protect the disprivileged as well as the privileged. Thus, the effect of MNC penetration on mortality is beneficial as well as detrimental — an apparent paradox of Cardoso's (1972) "dependent development," a phenomenon in which foreign corporations promote Third World industrialization that then benefits participants in the "advanced" sectors of Third World countries. Penetration may encourage health spending in some countries by fostering an internationalized, politically influential group of the middle class and workers who expect health measures common in developed countries (cf. Bornschier and Chase-Dunn 1985; Cardoso 1972). MNCs may serve as organizational channels through which core health measures are diffused in the non-core.

Nonetheless, the net effect of MNC penetration is to hinder progress in mortality. This result is consistent with the thinking of world-system theorists who at least implicitly recognize the beneficial role of the capitalist world-economy in the introduction of modern public health measures to underdeveloped areas. Wallerstein doubts "that the life prospects of the majority of the world's population *as of age one* are greater than previously [when the capitalist world-economy included a smaller portion of

the world's population]; I suspect the opposite is true" (1983, p. 101, emphasis in the original). Wallerstein's claim reflects the view that the intensified exploitation of producers in the periphery, the result of these areas' incorporation into the modern world-system, has been detrimental for non-core mortality despite the introduction of public health measures. Similarly — and without denying the importance of public health measures — Gregory and Piché (1983) attack conventional demographic explanations of Third World mortality decline for emphasizing health measures introduced from the developed countries, whereas mortality declines in the developed countries are attributed to improved public health due to increased living standards (e.g., Arriaga and Davis 1969). These explanations ignore the role of political economy in Third World mortality. Gregory and Piché attribute mortality differentials between developed and underdeveloped areas to geographic variation in the nature of "capital's effort to minimize the costs of reproducing labor" — i.e., the costs capital must pay to obtain the labor it requires — "and labor's struggle to achieve a more satisfactory level of living" (p. 92). They briefly note that these processes occur in the context of an international capitalist system. Again, MNC investment is one of the major processes that creates and maintains this international system.

Controls for Other Variables

Adding other potentially important intervening variables to mortality models controlling health expenditure and physician change (not shown) alters none of the preceding interpretations for the effects of MNC penetration on mortality. Change in calorie supply per capita from 1967 to 1980 is not significant, and controlling it does not diminish the effect of MNC penetration. Similarly, controlling the 1965-77 growth rate of GNP per capita does not undermine the effect of MNC penetration — economic growth was significant only in the infant mortality model, where its effect was actually harmful — underscoring the argument that processes underlying recent Third World economic growth are often incompatible with improved living standards.¹⁴ These results leave unresolved the intervening processes through which MNC penetration *inhibits* mortality improvement, an issue to which

have missing health spending data, whereas several Latin American and sub-Saharan African countries constitute nearly all the cases with missing physician data. However, none of these differences between countries with and without health services data is statistically significant (.10 level). Further, GNP per capita levels are virtually identical for countries with and without these data. These similarities suggest that the missing cases do not systematically affect the findings, though there is no substitute for the health services data themselves.

¹⁴ The data for calorie supply and economic growth

Table 4. Regression of Change in (Log) Health Expenditures, 1970-80, on Other Independent Variables (N = 45)

Independent Variables	Regression Model
Infant mortality 1965-70	.00085 (.73)
MNC penetration (log)	.25*** (2.78)
MNC investment flows	-.00056 (1.08)
GNP per capita	-.0013*** (2.54)
GNP per capita (squared) ^a	.010*** (2.90)
Capital formation	.024*** (2.51)
School enrollment (log)	.092 (.40)
Change in crude birth rate	-.021* (1.65)
(Constant)	-.64
R ²	.373
Adjusted R ²	.234

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$ (one-tailed tests)^a Coefficient shown is actual coefficient multiplied by 10⁴.

Note: For each regressor, unstandardized regression coefficients are shown with corresponding absolute t-ratios in parentheses.

mortality in Table 2.¹¹ When change in health spending is controlled (Model 3), the detrimental MNC penetration effect is significant and considerably larger than the corresponding coefficient in Table 2. The effect for MNC penetration drops to insignificance when change in physicians per 100,000 is controlled (Model 4), but controls for both health service variables yield a substantial harmful effect of MNC penetration on infant mortality (Model 5). Though the coefficient for change in physicians in Model 5 is unexpectedly positive, this effect is properly interpreted as nonsignificant because the reversed sign makes the one-tailed test inappropriate.¹² The important determinant of infant

¹¹ Since MNC penetration did not approach significance in the infant mortality models of Table 2 and since this test is for suppression, no variables are trimmed from the original model because of nonsignificance.

¹² The reversed sign may indicate that — once change in general health spending is controlled —

mortality is change in health spending, not physicians, making Model 3 the most appropriate infant mortality model in this research.¹³

The importance of change in health spending implies MNC penetration has a beneficial indirect effect on infant mortality via health spending. To test for this possibility, Table 4 regresses this intervening variable on the other independent variables, including lagged infant mortality. MNC penetration indeed has a beneficial impact on change in health expenditures, as does capital formation. GNP per capita has a negative influence on change in health spending over most of its range, reflecting the fact that poorer countries have higher *proportionate* improvements in health spending (the dependent variable measures proportionate change). The negative coefficient for change in the crude birth rate suggests that small declines in the birth rate and concomitant population growth make increases in per capita health spending difficult.

MNC penetration has a standardized regression coefficient of .39 in the health spending model in Table 4. The corresponding infant mortality model (Table 3, Model 3) yields standardized coefficients of .07 for MNC penetration and -.06 for health spending change. Aside from the coefficient for the lagged dependent variable (.90) and coefficients for GNP per capita inflated by multicollinearity (-.17 and .16), these are the next largest effects after secondary school enrollments (-.11). If all regressors except health spending are considered exogenous, it follows from rules of path analysis that the direct effect of MNC penetration on infant mortality is harmful (.07) though its small indirect effect via health spending is beneficial (-.02). MNC penetration's direct harmful effect

change in number of physicians represents diversion of resources to expensive, curative care instead of less expensive paramedical personnel and preventive measures which may be more beneficial for infant mortality among the poor.

¹³ Obviously, the many missing cases for the intervening health services variables make analysis of these variables' impact difficult. Comparison of countries with and without health spending data for the sample of 63 countries reveals the nations with missing data have slightly poorer mortality levels on average, though countries with missing physician data tend to have mortality levels virtually identical to those of countries for which these data are available. Latin American and Southern European countries are less likely than countries in other regions to

Table 3. Regression Models for Mortality Measures, 1975-80, with Controls for Change in Government Health Spending Per Capita and Change in Physicians Per 100,000

Independent Variables	Life expectancy (e_1)		Infant mortality (q_0)		
	Model 1	Model 2	Model 3	Model 4	Model 5
Lagged dependent variable, 1965-70	118.32*** (27.66)	121.17*** (36.11)	.87*** (27.03)	.86*** (21.82)	.86*** (24.33)
MNC penetration (log)	-.64 (1.04)	-.62* (1.34)	7.68** (2.09)	.53 (.12)	7.60** (1.85)
MNC investment flows	.0060** (2.22)	.0048** (2.01)	.030* (1.54)	-.0070 (.25)	.023 (1.23)
GNP per capita	.0033 (1.01)	.0057** (2.18)	-.029** (1.70)	-.021 (.82)	-.027 (1.28)
GNP per capita (squared)*	-.017 (.85)	-.035** (1.95)	.25** (2.11)	.21 (1.25)	.25** (1.77)
Capital formation			.050 (.16)	-.49* (1.41)	.23 (.70)
School enrollment (log)			-21.06*** (2.53)	-13.93 (1.14)	-25.69*** (2.66)
Change in crude birth rate	-.11** (2.19)	-.035 (.55)	.45 (1.26)	.53 (.81)	.53 (1.17)
Change in (log) health expenditures per capita	.42 (.79)		-10.13*** (2.43)		-14.49*** (2.59)
Change in (log) physicians per 100,000		.83 (.66)		-10.70* (1.39)	11.15* (1.46)
(Constant)	-147.19	-152.41	-.26	14.40	-2.26
R ²	.985	.981	.982	.967	.984
Adjusted R ²	.982	.978	.977	.960	.977
N	45	52	45	52	36

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$ (one-tailed tests)

* Coefficient shown is actual coefficient multiplied by 10⁴.

Note: For each regressor, unstandardized regression coefficients are shown with corresponding absolute t-ratios in parentheses; q_0 = infant mortality rate per 1000, e_1 = life expectancy at one year of age. See note in Table 1 regarding direction of scoring for q_0 and e_1 .

The most important results in Models 1 and 2 concern MNC penetration and investment flows. If the significant detrimental effects of MNC penetration on life expectancy shown in Table 2 are mediated through changes in health measures, these effects should disappear when change in health services is controlled, and significant positive effects should emerge for health spending and physicians per capita. However, the health services variables are not significant, and MNC penetration is still significant in Model 2; though MNC penetration is no longer significant in Model 1, the t-ratio is higher than that for health spending (indicating spending, not MNC penetration, should be trimmed from the equation). Thus, Model 2 in Table 2 is the more

appropriate model of life expectancy at age one. MNC investment flows are significant for both life expectancy models, indicating that effects shown in Table 2 are not substantially mediated by health services.

Even more surprising, coefficients for MNC penetration in equivalent models for life expectancy at birth (not shown) were much stronger when the health measures were controlled, suggesting that the absence of health services controls in Model 1 of Table 2 suppresses a significant, harmful effect of MNC penetration on infant mortality. The infant mortality models in Table 3 (Models 3-5) generally support this interpretation and overturn the nonsignificant relation between MNC penetration and infant

effective remedies or in seeking appropriate basic health care for the diarrheal and respiratory ailments responsible for the deaths of many young children in the Third World (Grosse 1980, pp. 102-104).

The potentially causal relationship between MNC penetration and school enrollments merits closer attention. The partial relationship between MNC penetration and school enrollment is large and negative, suggesting that penetration has harmful effects on enrollment and thus is indirectly detrimental to infant mortality. A longitudinal study of trade dependence and enrollment also suggests such effects (Meyer, Ramirez, Robinson, and Boli-Bennett 1979, pp. 39, 48). However, since penetration and enrollment are measured near the same time, it is conceivable that enrollment negatively affects penetration — in which case the relationship between penetration and infant mortality is spurious. A more complex longitudinal research design, with suitably long lags between MNC penetration and school enrollment and with a control for earlier enrollment levels, is needed to clarify the relationship between penetration and infant mortality. The more conservative conclusion is that penetration has no impact on infant mortality. In any case, school enrollment should be controlled in future infant mortality research; when enrollment is not controlled, as in Table 1, penetration has a significant, direct, harmful relationship with infant mortality.

Though MNC penetration has a nonsignificant direct harmful effect on infant mortality, its influence on life expectancy at age one (and at birth as well) is harmful and significant. On the other hand, recent flows of MNC investment have consistently beneficial though sometimes negligible effects on mortality.

Trends in Effects

To assess the possibility that the detrimental effects of MNC penetration on mortality strengthen with time, Models 3 and 4 present results for an earlier period (1970-75) for comparison with Models 1 and 2. In these earlier models, MNC investment flows are for the period 1967-73, and birth rate change is over the interval 1965-70 to 1970-75; other independent variables are unchanged.⁹ The coefficients for MNC penetration tend to increase over time,

although this trend is not very meaningful for the nonsignificant effects in the infant mortality models. MNC investment flow has no significant effect in the 1970-75 models.

Secondary school enrollment coefficients also strengthen over time, a trend most pronounced for infant mortality. This finding may reflect gradually accruing national and personal income benefits from increased human capital in the late 1960s; more directly, this trend may reflect improved infant health care practices by late-1960s students, many of whom would be parents of infants by the late 1970s. Physical capital formation also has a somewhat stronger beneficial effect in the latter period than in the former. Change in the crude birth rate, on the other hand, has a diminishing impact over time on infant mortality.

The increasing effect of MNC penetration on life expectancy at age one is consistent with trends identified in research on economic growth and has important implications. Ideally, however, trend assessment should be based on a longer time frame. These trends should be reassessed when more recent mortality data are available for a substantial number of countries.

Health Services as Intervening Variables

Provision of health services is an important immediate cause of health and mortality levels. Since MNC penetration may influence availability of health services, the intervening roles of these health measures are examined. Table 3 presents 1975-80 mortality models controlling change in health expenditures and numbers of physicians. (Except when analysis shows each variable has significant effects, only one of these two variables is controlled in a given equation, since data for both variables are available for only 36 of the 63 countries studied here.) Models 1 and 2 indicate that changes in health expenditures and physicians have relationships in the expected direction with life expectancy at one year of age, but these effects do not approach significance.¹⁰

extreme scores are recoded to minimize skewness. Data on MNC investment stocks for 1967 are from the OECD (1972); birth rate data are from the United Nations (1986).

¹⁰ Models 1 and 2 in Table 3 exclude regressors that were not significant in the equivalent models of Table 2 in order to preserve degrees of freedom in the smaller sample. When restored to the models, these variables still did not attain significance.

⁹ Flows of MNC investment from 1967 to 1973 are computed by the same procedure as before and

Table 2. Regression Models for Mortality Measures, With Controls for Secondary School Enrollment and Birth Rate Change (N=63)

Independent Variables	1975-80 Mortality		1970-75 Mortality	
	Model 1 q_0	Model 2 e_1	Model 3 q_0	Model 4 e_1
Lagged dependent variable, 1965-70	.84*** (25.17)	116.52*** (33.39)	.92*** (55.06)	119.65*** (49.81)
MNC penetration (log)	2.42 (.60)	-.59* (1.44)	2.12 (.81)	-.42* (1.52)
MNC investment flows	-.0078 (.33)	.0043** (1.77)	.0061 (.40)	-.0010 (.70)
GNP per capita	-.027 (1.18)	.0044* (1.61)	-.013 (1.15)	.0041*** (2.55)
GNP per capita (squared)*	.22* (1.54)	-.027* (1.47)	.082 (1.16)	-.024** (2.07)
Capital formation	-.49* (1.58)	.030 (.91)	-.11 (.72)	.014 (.74)
School enrollment (log)	-15.71* (1.46)	1.31 (1.00)	-2.66 (.50)	1.03* (1.40)
Change in crude birth rate	.54 (1.07)	-.059* (1.34)	1.33*** (3.33)	-.059* (1.36)
(Constant)	15.59	-145.26	2.16	-151.91
R ²	.967	.981	.989	.994
Adjusted R ²	.962	.978	.988	.993

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$ (one-tailed tests)

*Coefficient shown is actual coefficient multiplied by 10⁴.

Note: For each regressor, unstandardized regression coefficients are shown with corresponding absolute t-ratios in parentheses; q_0 = infant mortality rate per 1000, e_1 = life expectancy at one year of age. See note in Table 1 regarding direction of scoring for q_0 and e_1 .

the impacts of stocks and flows of foreign investment on economic growth, as determined by Bornschier et al. (1978), tend to hold for mortality as well. The long-term effects of accumulated investment are to worsen mortality, but the short-term effects of new flows of investment can improve it.

Controls for Secondary Enrollment and Change in Birth Rates

In Table 2, Models 1 and 2 are identical to Models 3 and 4 in Table 1 except for the addition of controls for secondary school enrollment and change in crude birth rates. Signs of all coefficients in these new models are in the expected directions. Nonsignificant regressors in Models 3 and 4 of Table 1 remain nonsignificant with the addition of new controls. Secondary school enrollment is beneficial in both models, though statistically significant only for the infant mortality model. As those who warn of the "popula-

tion explosion" would expect, declines in the birth rate apparently contribute to improved mortality experience, though this relationship is significant only for life expectancy. However, the addition of the controls for school enrollment and change in birth rate reveals differences in the factors influencing mortality at different ages. For infant mortality, one GNP per capita term fails to attain significance (though this could be due in part to multicollinearity), and the effect of MNC penetration is no longer significant.

The control for secondary school enrollment is responsible for the different effects of MNC penetration in Models 1 and 2. The proportion of explained variance uniquely attributable to school enrollment is over four times greater for infant mortality than for life expectancy at age one — not surprising, since parents' education has a powerful impact on infant mortality (Hobcraft et al. 1984). Parents' education may play a crucial role in the administration of simple,

Table 1. Regression Models for Mortality Measures, 1975-80 (N = 63)

Independent Variables	Models Including Aid Dependence		Models Including MNC Investment Flows	
	Model 1 q_0	Model 2 e_1	Model 3 q_0	Model 4 e_1
Lagged dependent variable, 1965-70	.88*** (28.52)	121.86*** (39.86)	.88*** (26.08)	120.45*** (39.60)
MNC penetration (log)	6.93* (1.54)	-.92** (1.88)	6.58* (1.45)	-.85** (1.79)
MNC investment flows			-.019 (.87)	.0055** (2.31)
Foreign aid dependence (log)	-.58 (.12)	-.26 (.53)		
GNP per capita	-.059*** (2.66)	.0060*** (2.34)	-.059*** (2.94)	.0062*** (2.52)
GNP per capita (squared) ^a	.46*** (3.15)	-.040** (2.30)	.45*** (3.41)	-.041*** (2.46)
Capital formation	-.58** (2.09)	.036 (.96)	-.61** (2.30)	.041 (1.12)
(Constant)	2.45	-153.46	3.92	-151.43
R ²	.964	.979	.964	.980
Adjusted R ²	.960	.976	.960	.978

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$ (one-tailed tests)

^a Coefficient shown is actual coefficient multiplied by 10⁴.

Note: For each regressor, unstandardized regression coefficients are shown with corresponding absolute t-ratios in parentheses; q_0 = infant mortality rate per 1000, e_1 = life expectancy at one year of age. Note that the two mortality measures, q_0 and e_1 , are scored in opposite directions. High infant mortality scores indicate high mortality levels in the population under age one; high life expectancy at one year of age indicates low mortality levels in the population aged one and older. Consequently, independent variables with beneficial mortality effects have negative coefficients for infant mortality and positive coefficients for life expectancy at age one.

research design cannot distinguish between these two possibilities, the second is more plausible since it is unlikely that all arguments about aid's effects are incorrect. Because of its consistent lack of effects, aid dependence is excluded from subsequent models.

Most other independent variables have the expected effects in these models. One partial exception is GNP per capita, whose quadratic effect indicates that mortality improves with greater per capita GNP up to a point, then declines. The inflection points are approximately \$640 and \$750 (in 1967 U.S. dollars) for infant mortality and life expectancy at age one, respectively.⁸ However, since these GNP levels exceed those of 90 percent of the 63 countries examined, the per capita GNP effect is benefi-

cial for the great majority of observations. Capital formation is not significant in the model for life expectancy at age one, though it has the expected sign.

Effects of MNC Penetration and Investment Flows

Models 3 and 4, Table 1, add 1973-78 MNC investment flows and delete foreign aid as regressors. All effects are in the expected directions. Though the expected benefit of MNC investment flows is not significant for infant mortality, effects of MNC penetration are significant and detrimental for both mortality measures. London and Williams (1988) found a significant penetration effect for infant mortality but not for life expectancy at birth. The significant effect here for life expectancy at age one may be due to restriction of the analysis to countries with more reliable mortality data. Thus,

⁸ The inflection point of a quadratic function is $-\frac{a}{2b}$, where a is the coefficient of the first term in the function and b is the coefficient of the squared term.

Estimation Procedures

The models presented below are estimated with OLS regression and yield approximately normal distributions of residuals. All the models exhibit some heteroskedasticity in irregular patterns (e.g., "bow ties") that do not lend themselves to correction through transformations. Under these conditions, slope estimates are inefficient and conventional standard error estimates are inconsistent. White's (1980) consistent standard error estimates are used as a partial remedy.

Except for strongly correlated polynomial terms for per capita GNP, no regressor has a variance inflation factor as large as five, which would have indicated excessive multicollinearity for that regressor (Montgomery and Peck 1982, p. 300). Nonsignificant results for GNP per capita may be caused by multicollinearity, but multicollinearity is negligible in all other nonsignificant results.

Panel Designs

All models are based on panel designs, with the independent variables measured prior to the dependent variables. Since the detrimental social, economic, and political effects of investment dependence should require some years to develop and since investment dependence has increasingly stronger negative effects on economic growth over time (Bornschier et al. 1978), the impact of investment dependence on mortality seems likely to increase with longer lags; therefore, the longest possible lag between independent and dependent variables is desired. MNC penetration and aid dependence are measured for 1967, the earliest date for which the MNC penetration data are available. Mortality is measured for 1970-75 and 1975-80 so that trends in effects may be identified (virtually all Third World mortality figures published for 1980 and later are projections).

The mortality models also include lagged dependent variables as regressors; these are measured for 1965-70 and obtained from the same source as the dependent variables. Coefficients of regressors (other than the lagged dependent variable) equal those in models which substitute the difference between mortality at two points in time for the dependent variable and exclude the lagged dependent variable from the right side of the equation (Kessler and Greenberg 1981, p. 10). That is, the models may be

interpreted as change models rather than models of mortality at a given point in time. The lagged dependent variable in models for life expectancy at one year of age is logged to achieve linearity; without this transformation the coefficients could be interpreted directly as those of a change-score model. The lagged dependent variable for the infant mortality models is not transformed. Such models yield conservative tests of hypotheses about regressors other than the lagged dependent variable, since the coefficients of these regressors may be biased toward zero (Hannan 1979). Though the following interpretations generally refer, for sake of brevity, to regressors' effects on *mortality*, all interpretations imply effects on *change* in mortality.

ANALYSIS

Effects of Aid Dependence

Table 1 presents regression models for infant mortality (q_0) and life expectancy at age one (e_1) without controls for school enrollment, birth rate, or health measures. These models are similar to London and Williams' (1988) models of infant mortality and life expectancy at birth.⁷

Foreign aid dependence is not detrimental to 1975-80 infant mortality (Model 1) or life expectancy at age one (Model 2). (Identical models for 1970-75 mortality, not shown, also revealed no significant effects for aid dependence.) There are two possible explanations for bilateral foreign aid's lack of effect: (1) All the dependency and diffusionist arguments about aid are wrong, and foreign aid has no good or ill effects on mortality; or (2) foreign aid has both beneficial and detrimental effects, but countervailing effects cancel out yielding a null net effect (e.g., aid may provide useful health technology but foster inequality). Although this

⁷ Models for life expectancy at birth (e_0) were also examined. The e_0 models were generally identical to those for e_1 in Tables 1 and 2 in that regressors significant for one life expectancy variable were also significant for the other and were of the same sign. The exceptions are that (1) capital formation had positive effects significant at the .10 level in all 1975-80 e_0 models corresponding to Tables 1 and 2, though this regressor was not significant for 1970-75 e_0 , and (2) secondary school enrollment is not significant for 1970-75 e_0 (cf. Table 2). Models for e_0 corresponding to Table 3 differed from the e_1 models in that MNC penetration and GNP per capita were always statistically significant.

tionable assumption), it should enhance the ability of households to obtain basic needs, such as health care, that reduce death rates. More credible is the possibility that capital formation enhances the ability of governments to pay for preventive health measures (e.g., sanitation) and health care infrastructure. Previous cross-national research has found that capital formation has a beneficial effect on mortality, though this effect is not always statistically significant (London and Williams 1988). The rate of physical capital formation is measured here as mean annual gross domestic investment as a percentage of gross domestic product for 1967-70.

School enrollment may be related to mortality in two ways. First, the greater the educational level of the population the greater should be the rate of economic growth, since the human capital of the labor force (often measured by secondary school enrollment) is enhanced. High levels of school enrollment may also lessen income inequality, since the fraction of a population enrolled reflects the degree to which human capital is evenly distributed (cf. Fry 1981). Both economic growth and reduced inequality, in turn, may enhance life expectancy and reduce infant mortality.⁵ Second, high enrollments reduce mortality because education diffuses knowledge of good health and sanitation practices and understanding of how to find and use medical services (Grosse and Perry 1982; Hobcraft, McDonald, and Rutstein 1984). Bullock's (1986) cross-national research indicates that primary school enrollment has a beneficial effect on change in infant mortality.

School enrollment is measured by the number of students in all types of secondary schools as a percentage of total population, averaged over the 1967-70 period (UNESCO, various years). Countries for which enrollment data are available for at least two years in the 1967-70 period are retained. This measure (plus one) is logged to reduce skewness.

Brown (1987) and other neo-Malthusians argue that rapid population growth, especially insofar as it reflects a high birth rate, threatens the well-being of Third World populations. A high birth rate may inhibit economic growth by

increasing the level of consumption relative to investment for future production, and it may increase income inequality. Rapid population growth may also reduce the per capita stock of resources (e.g., health care infrastructure, arable land) used to provide basic needs (Ahluwalia 1976; Jackman 1982). Any of these effects may reduce quality of life itself.⁶ High birth rates may also indicate closely-spaced births among women and high numbers of births per woman, factors contributing to childhood mortality and poor maternal health (Winikoff and Brown 1980, p. 173). Crude birth rate data taken from the United Nations (1986) are incorporated in this analysis as change scores, i.e., 1975-80 birth rate minus 1965-70 rate (negative scores indicating reductions in the birth rate and positive scores indicating increases).

Countries Studied

The sample consists of 63 Third World countries (see Appendix) for which complete data were available except for the health services variables, which were missing for many nations. The sample is restricted to countries for which there are fairly reliable data on mortality. Where inadequate empirical data were available, United Nations (1986) estimates used here assumed increases in life expectancy at birth of 2.0 or 2.5 years over a five-year period; further, the U.N. appeared to assume no change in life expectancy in several countries experiencing widespread violence (e.g., Ethiopia). Countries were eliminated from the analysis if *any* of these levels of life expectancy change (0, 2.0, or 2.5) occurred *both* for the interval between 1965-70 and 1970-75 *and* for the interval between 1970-75 and 1975-80. This procedure excluded 13 countries — all in Africa — from the 76 for which data were available (see Appendix). Since infant mortality and life expectancy at age one are components of life expectancy at birth, removal of these countries tends to eliminate cases with low reliability on the two dependent mortality variables. Socialist countries (countries with virtually no private sector) are excluded because required data are not available for most socialist countries. Also excluded are countries below 1,000,000 population.

⁵ As one reviewer noted, the opposite causal order is also possible: that education is not a driving macro-economic force, but rather societies with higher incomes and greater equality can more easily afford and are more inclined to provide education on a mass scale.

⁶ There is some disagreement about the relationship between birth rates and quality of life. For example, Murdoch (1980) emphasizes material inequality as a cause of high birth rates more than as an effect.

as net official bilateral nonmilitary loan disbursements during 1960-67 from the same countries used for the MNC penetration measure (OECD various years b).³ Bilateral aid (aid from single donor countries) is used since such aid dwarfed multilateral aid in the 1960s. This debt is taken as a percentage of 1967 GNP and logged to remedy skewness.⁴

Intervening Variables: Health Services

Sell and Kunitz (1986-87, p. 4) partially attribute recent slowdowns in Third World mortality declines to reduced public health spending due to exploding foreign debt and subsequent austerity measures. Public spending on health may also be influenced by investment dependence. Diffusionists imply that MNC investment and foreign aid promote health spending through economic growth. Conversely, dependency theorists imply that MNC penetration may impede public health measures by obstructing host government policies that are beneficial to much of the population but harmful to MNC interests (e.g., due to taxes needed to fund these policies). MNCs may also reduce government funds available for health by disguising taxable profits or by requiring government investment in infrastructure (Hymer 1972; Müller 1979). Similarly, dependence on foreign aid may encourage governments to promote the interests of the aid "donor" and neglect the disprivileged (Lappé et al. 1981). In the longer run, aid dependence may reduce the capacity of recipient governments to spend on health measures owing to accumulation of large foreign debts.

Two measures of change in the provision of health services were used: change in health expenditures and in availability of physicians.

³ These 1960-67 net disbursements should approximate outstanding debt from official bilateral lending at the end of 1967. Though bilateral lending data are not available by recipient countries prior to 1960, annual net official lending by OECD countries was much lower in the 1950s than in the 1960s. Bilateral official lending by these countries accounts for the great majority of all bilateral foreign aid provided as loans during 1960-67. Furthermore, net bilateral OECD lending is more than double the net flows to less developed nations from multilateral agencies during 1960-67 (Wimberley 1986, pp. 210-13).

⁴ A constant of two was added to this percentage to avoid logging any quantity less than one, the inflection point in a log function. All logs used in the study are common logarithms.

Data for government health expenditures in 1970 and 1980 were obtained from the U.S. Arms Control and Disarmament Agency (1978) and the World Bank (1983), respectively. Where data were not available for 1970 or 1980, data from adjacent years were used, yielding information for both dates for 45 countries. Change in health expenditures is measured as 1980 per capita expenditures minus 1970 per capita expenditures, expressed in 1967 U.S. dollars. To minimize skewness, the per capita figures (plus one) are logged before subtraction. A measure of the availability of physicians is obtained for 52 countries by subtracting the logged number of physicians per 100,000 population in 1970 from that for 1980 (World Bank 1983). Both indicators of change in health services measure proportionate change, owing to the use of logarithms.

Control Variables

Other factors may also influence mortality and should be controlled in mortality models: per capita GNP, capital formation, school enrollment, and birth rate. Data for these variables are from the World Bank (1983) except where otherwise noted.

Aggregate production of goods and services, indicated by GNP per capita, contributes to the *potential* for satisfaction of basic needs. However, this effect must be qualified. Hicks and Streeten (1979) find beneficial but nonlinear relationships between per capita income and basic needs measures in a sample of developed and underdeveloped countries. Further, rapid rates of economic growth in some Third World countries have been accompanied by stagnating or worsening living conditions for large segments of their populations (Todaro 1981, p. 68). GNP per capita for 1967 is obtained by converting GNP in domestic currency to 1967 U.S. dollars, then dividing by mid-year population. Preliminary analysis indicated that a quadratic specification was more appropriate than either a logged or untransformed version.

A high rate of capital formation may also reduce mortality. The positive impact of investment rates on economic growth is well established (cf. Bornschier and Chase-Dunn 1985, pp. 80-82) and has long been seen by development economists as a key to development. To the extent that capital formation contributes to higher personal incomes among low-income groups via a "trickle-down" process (a ques-

performance. Though previous investigators (e.g., Dixon 1984) have used the Physical Quality of Life Index or other composite measures of basic needs performance, there is little theoretical basis for the choice of components and their weights in these indexes. Furthermore, when components are not very highly correlated their combination obscures important differences among countries (Hicks and Streeten 1979).

Since causes of death vary by age (Preston 1976), the relationship between investment dependence and infant mortality rates may differ from the relationship between investment dependence and mortality for older persons. Therefore, this study uses both infant mortality rates and life expectancy at one year of age as dependent variables. Data for infant mortality per 1000 live births are taken from the United Nations' (1986) internally consistent set of demographic estimates.¹ Years of life expectancy at one year of age is calculated from infant mortality and life expectancy at birth (also from the U.N. [1986]) with a formula used by Morris (1979). The two dependent variables, measured for both 1970-75 and 1975-80, are distributed approximately normally in this sample.

Measures of Foreign Investment

Previous research suggests that new flows of MNC investment have positive short-term effects on economic growth, while accumulated stocks of MNC investment have negative long-term effects (Bornschieer et al. 1978). Similarly, London and Williams (1988) examine 1960-83 mortality data for non-core countries and find that stocks of MNC investment tend to inhibit improvement in life expectancy at birth and infant mortality, but they find that recent flows are beneficial. These findings confirm that the previously described harmful social, economic, and political distortions of investment dependence take some time to emerge, though the initial impact of foreign investment may be beneficial. Given that investment stocks measure the long-term effects implicit in dependency theorizing, the present analysis uses stocks to operationalize investment dependence. Recent investment flows are also incorporated to thoroughly assess the effects of MNC investment.

The measure of MNC investment stocks used in this analysis is Bornschieer and Chase-Dunn's (1985) MNC penetration index, based on the stock (book value) of direct investment from 16 Organisation for Economic Cooperation and Development (OECD) member countries in 1967. For each country, the index is the square root of the product of (1) the ratio of MNC investment stock to population in millions (a proxy for labor force size) and (2) the ratio of MNC investment stock to total domestic capital stock in billions of U.S. dollars. (MNC investment stock is measured in millions of 1967 U.S. dollars.) These penetration data were also used in London and Williams' (1988) similar cross-national study of basic needs satisfaction. Preliminary residual analysis indicated MNC penetration should be logged.

Recent MNC investment flows are measured by the ratio of (1) 1978 minus 1973 direct investment from OECD countries (OECD, various years a) to (2) mean annual gross domestic product (GDP) for 1973-78 (World Bank 1983). All investment and GDP values were converted to constant 1967 U.S. dollars. Outliers were recoded to minimize skewness.²

Previous research also suggests that debt incurred from foreign aid programs is relevant for mortality. In an analysis of 83 Third World countries, Bullock (1986) finds a harmful net effect of foreign aid flows on change in infant mortality, although controlling for school enrollment eliminates the effect. Sell and Kunitz (1986-87, pp. 19-21) find that average per capita outstanding debt to the IBRD (a major unit of the World Bank) is negatively related to improvements in life expectancy at birth in 62 Third World countries, whereas they find no relationship for other multilateral lenders (official development assistance lenders funded by more than one country). On the other hand, for many multilateral lenders examined, *growth* in lending benefited life expectancy.

Foreign aid dependence in 1967 is measured

¹ Compared to World Bank sources commonly used in cross-national mortality studies, the U.N. provides extensive documentation of estimation procedures.

² The GDP data were originally in domestic currency units. These and other data obtained in such units were converted to 1967 U.S. dollars based on the average annual exchange rate for 1966-68, with each year's exchange rate weighted by the corresponding implicit U.S. GNP deflator (U.S. Department of Commerce 1981). To maintain comparability with Bornschieer and Chase-Dunn's (1985) measure, MNC investment flows are measured as the dollar change in foreign direct investment per \$1000 of GDP.

ment dependence on non-core areas. MNCs are said to distort development in Third World countries by (1) slowing economic growth, owing to such factors as decapitalization and displacement of domestic firms by the MNC; (2) promoting income inequality, in part because inequality is often in the interest of politically and economically powerful foreign investors; (3) obstructing progressive domestic political processes that are contrary to core economic interests; (4) diverting land from food production for domestic use and displacing poor farmers who have little alternative for a livelihood; and (5) corrupting local consumer tastes (Frank 1969; George 1977; Moran 1978). Foreign aid is said to harm non-core recipient countries through various means: (1) creation of debt, (2) persuasion of recipient governments to cooperate with MNCs and other exploitive mechanisms of the world-system, (3) support of repressive governments unconcerned with the poor, and (4) fostering of income inequality through such means as the promotion of capital-intensive, labor-conserving production where unemployment and underemployment are high (Frank 1969; Lappé, Collins, and Kinley 1981; Wood 1980). Some of the distortions attributed to MNCs and foreign aid inhibit economic growth; others have more directly detrimental effects on quality of life in the Third World. Advocates of a diffusionist view, on the other hand, contend that MNC investment and foreign aid *promote* development by providing needed capital, technology, technological and managerial expertise, and similar resources (Clausen 1985; Freeman 1981), although conservative diffusionists argue aid harms recipients by undermining *laissez faire* (Sowell 1983).

There is evidence to support both views of foreign investment's impact, but much of it is anecdotal or relies on case studies — methods especially susceptible to aberrant cases or selective observation. Cross-national quantitative analysis is a more rigorous methodology for determining the net impact of investment dependence on development. Previous cross-national studies, however, have often used questionable measures of development—in particular, economic growth and income inequality (e.g., Bornschier, Chase-Dunn, and Robinson 1978; Timberlake and Williams 1984). National economic growth is not always reflected in increased well-being among the poor. Some Third World countries that underwent rapid economic growth in the 1960s and 1970s simultaneously

experienced greater unemployment and income inequality (Todaro 1981, p. 69). Brazil's "economic miracle," for example, was accompanied by a decline in real wages and an increase in infant mortality (Warnock 1987, p. 17; Wood 1982). Further, Firebaugh (1980) warns that income inequality is a poor proxy for the more fundamental matter of living standards, since "the relationship between income distribution and standard-of-living distribution varies substantially across nations" (1980, p. 143).

The basic needs view of development, an alternative to the economic growth and reduction-of-inequality views, defines development in terms of the ultimate goal that "all human beings should have the opportunity to live full lives" (Streeten 1981, p. xi). Universal and minimally essential needs include adequate nutrition, safe water, sanitation, decent housing, basic education, and health (Hicks and Streeten 1979).

The health status of a population is a key consequence of satisfying other basic needs. A few multivariate cross-national analyses have addressed the issue of investment dependence and health: Bullock (1986), London and Williams (1988), Sell and Kunitz (1986-87), and Wimberley (1986). Although these earlier studies tend to find negative effects of investment dependence on health, many questions remain unanswered.

This study examines several issues not previously investigated: the net impact on mortality of stocks and flows of MNC investment and of debt generated by foreign aid when alternative explanations of mortality based on school enrollments, birth rates, and other factors are controlled, as well as trends in these effects over increasingly long time lags. Two age-specific measures of mortality are used: infant mortality and life expectancy at one year of age. Finally, this analysis examines the role of specific health measures introduced from developed countries, measures that may mediate the effects of investment dependence on mortality. Arriaga and Davis (1969), for example, attribute the sharp declines in mortality levels in Latin America after 1930 to the diffusion of inexpensive public health measures from developed countries.

HYPOTHESES, DATA, AND METHODS

Mortality Measures

My focus on mortality reflects a preference for separate indicators of a country's basic needs

INVESTMENT DEPENDENCE AND ALTERNATIVE EXPLANATIONS OF THIRD WORLD MORTALITY: A CROSS-NATIONAL STUDY*

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Dependency perspectives contend that foreign investment promotes underdevelopment in the Third World, whereas diffusionist perspectives argue that it promotes development. Earlier cross-national research conceptualized development as economic growth or inequality. This study conceptualizes development as basic needs satisfaction, focusing on infant mortality and life expectancy at one year of age. Mortality effects of 1967 multinational corporate penetration and foreign aid dependence are assessed for 63 underdeveloped countries in panel models extending to 1980. Other variables affecting mortality include multinational corporate investment flows, secondary school enrollment, and changes in birth rates and government health spending. Aid dependence has no effects. Multinational corporate penetration has significant harmful effects on mortality that tend to increase with time. In addition to harmful effects on infant mortality, penetration has small benefits for infant mortality via promotion of health spending. The influence of multinational corporate penetration on mortality appears to be mediated in part by inequality.

The world-system and dependency perspectives contend that relationships between core and non-core areas promote underdevelopment for most Third World inhabitants. According to these perspectives, the core (consisting of developed areas of the capitalist world-economy) has long exploited the non-core (underdeveloped areas) through economic linkages such as investment dependence (Frank 1969; Wallerstein 1979). On the other hand, the diffusionist perspective that dominates development economics and government policymaking in the U.S. sees foreign investment as a key to more rapid development (Clausen 1985; Freeman 1981). For example, Thomas Sowell (1983) states that while multinational corporations (MNCs) may have harmful effects on Third World host countries, their net effect is

overwhelmingly beneficial: "multinational corporations are blamed for a pervasive reality of the human condition — that benefits have costs" (p. 241). This cross-national study examines the net effects of foreign investment on Third World mortality — one dimension of development — controlling for several alternative explanations of mortality differences.

Cross-national research finds harmful, but usually not statistically significant, effects of trade dependence on mortality and on composite indexes that include mortality indicators (Bullock 1986; Cutright and Adams 1984; Dixon 1984; Jackman 1975). However, many theorists see investment dependence as more important than trade dependence in the exploitation of the post-colonial Third World (e.g., Dos Santos 1970; Frank 1969, p. 155). From the mid-1960s to the mid-1970s, average trade dependence in peripheral nations declined, while average investment dependence — MNC penetration, foreign aid, and other debt — increased (Bornschiefer and Chase-Dunn 1985). If the negative effects of investment dependence outweigh the beneficial effects claimed by diffusionists, foreign capital provided by MNCs and foreign aid should have adverse effects on mortality and other aspects of development.

Many theoretical works, case studies, and polemics identify detrimental effects of invest-

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Appendix B. Correlations, Means, and Standard Deviations for all Variables for Less Developed Countries

Variable	(1)	(2)	(3)	(4)	(5)	(6)
(1) Child mortality	—					
(2) Crude death rate	.856	—				
(3) Education enrollment	-.732	-.781	—			
(4) GNP per capita (log)	-.741	-.762	.757	—		
(5) Disarticulation	.414	.442	-.355	-.140	—	
(6) Capital penetration (log)	-.022	-.068	-.121	.166	.154	—
Mean	12.05	13.24	37.51	6.36	62.50	7.98
S.D.	11.893	5.417	23.929	.956	25.486	1.474
N	61	63	61	62	63	60

Note: Using listwise deletion, correlations are based on N=57.

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democracies provide a context for testing the generality of these models. These nations also present relatively few measurement problems.⁴

Variables

The dependent variables. The World Health Organization reports annual sex-specific rates of death "due to injury purposely inflicted by others" for the years 1951-1984, and annual age-specific rates beginning in 1965 (WHO, various years).⁵ The age groups analyzed are infants under 1 year, 1 - 4 year olds, 5 - 14 year olds, and those over 14. Because the time-varying independent variables in the analysis are available only at five-year intervals, mean sex-specific rates were calculated at seven time points and mean age-specific rates at five time points. Each mean death rate is based on data from the year for which the independent variables were available and the subsequent four years (with the exception of the first sex-specific rates which are based on data for 1951-1954). The timing of

observations on the independent and dependent variables, then, is consistent with the causal ordering presumed by existing models. Averaging the rates also corrects for yearly fluctuations due to the small number of homicides in some nations.

The independent variables. Measures of the material context include indicators of both absolute and relative deprivation. The former is measured by social security expenditures as a percentage of GNP (International Labour Office).⁶ Relative deprivation is measured by the Gini index of household income inequality (Weatherby, Nam, and Isaac 1983). The integrative context is represented by two indicators. The number of divorces per 1,000 marriages (U.N. Demographic Yearbook) measures intra-group integration, and the percentage of significant ethnic and linguistic groups in the population (Taylor and Hudson 1972) measures inter-group integration. The demographic context is characterized by percentage of the population aged 15-29 (U.N. Demographic Yearbook), and by an approximation of the residential population density ratio, the ratio of the total number of female labor force participants (International Labour Office 1977) to the total households (U.N. Demographic Yearbook).⁷ The cultural

⁴ The United Nations typically cautions that the infant mortality rates reported for many less developed countries (LDCs) are based on incomplete civil registers of unknown reliability. Since similar registers are the source of the WHO death rates, it seems likely that statistics on the purposeful killing of infants and children from many LDCs are unreliable. An examination of WHO data for LDCs reveals, for example, that in 1968 the Philippines reported 20 homicides of infants less than a year old, and 59 child homicides; four years later, there were no recorded infanticides, and only two recorded homicides of young children. Such unreliability probably contributes to the absence of effects of explanatory variables in Fiala and LaFree's (1988) analysis of child homicide in LDCs. Even in developed nations, inaccurate reporting of infant and child homicides may make these rates less reliable than rates for adults.

⁵ Rates are calculated per 100,000 persons in the appropriate sex or age group, except infant rates, which are calculated per 100,000 live births. WHO changed its homicide measure during this 30-year period, but this does not appear to result in significant changes in the data. Prior to the 1960s, the measure included "deaths by legal intervention (which includes killings by police, but not legal execution) and deaths due to war." However, a comparison of the WHO homicide data for young males with estimates of battle deaths (Small and Singer 1981) for those nations involved in wars in the 1950s indicates that war deaths apparently were not included in the homicide data with the exception of France during the Algerian War. Results were unchanged after adjusting the French data for these casualties. No adjust-

ment was made for police killings in early years. I assume the number of such killings is small, and their inclusion has not biased the observed estimates. Other sources of measurement error in the homicide data, to the extent the error is random, will attenuate observed relationships, and lessen support for the predicted effects.

⁶ This measure includes benefit expenditures (cash and in-kind) for a diverse array of programs, including pensions, sickness/maternity, and public health, as well as means-tested public assistance, unemployment compensation, and family allowances, though these latter three receive less than a third of social security expenditures in most developed democracies (Pampel and Williamson 1988). Thus, the population benefitting from social security expenditures is broader than found in most studies of welfare dependence. I also examined the effects of more disaggregated measures of spending on social programs, including a measure of cash transfer payments per GNP, and family allowance payments per GNP. Both include a larger proportion of payments to needy populations than do social security expenditures. Their effects are similar to, though somewhat lower than, the effects of the social security measure, a finding that parallels Fiala and LaFree's (1988).

⁷ This measure differs from that used by Cohen and Felson (1979). They use the ratio of the number of

context is represented by three variables tapping the existence, extent, and severity of official violence: a dummy variable indicating the existence of the death penalty (U.N. Economic and Social Council 1985), the number of international and civil wars in which the nation participated between 1900 and 1980, and the total battle deaths (per million pre-war population) incurred during these wars (Small and Singer 1981).⁸

Social security expenditures, divorce rates, the ratio of female labor force participants to households, the percentage of the population aged 15-29, and the death penalty vary through time and among nations, and are expected to account for both national and time-period differences in homicide rates. The remaining variables vary only among nations. The measures of income inequality and of ethnic and linguistic diversity are available for only one year, in most cases near the mid-point of the period. Along with the measures of the number of wars and battle deaths, income inequality and ethnic heterogeneity are assumed to tap relatively enduring patterns that distinguish advanced democracies from each other. Note that none of these four can account for variations through time in homicide rates.

VARIATION IN SEX- AND AGE-SPECIFIC HOMICIDE RATES

Descriptive data on post-war trends and cross-national differences in homicide rates that the model is expected to explain are presented in Table 1. These data challenge conclusions of other analysts concerning the lack of covariation between female and male victimization rates, and between adult and child victimization rates.

Female and Male Homicide Rates, 1950-1984

According to Verkko's (1951) "universal static and dynamic laws of homicide," homicide rates for females are relatively invariant over time and place. For these 18 nations and three decades, this is clearly not the case (columns 1 and 2). For both sexes, homicide rates (averaged over

nations) declined from the early 1950s to the early 1960s, then increased continuously to their highest levels by the 1980s. The zero-order correlation between the rates is .90. From a low point in the early 1960s to a high point in 1980, the average homicide rate for females for all 18 nations increased by almost 50 percent, compared to 62 percent for males. (Among the nations, only Italy and Japan had lower homicide rates after 1967 compared to pre-1967 rates.) Regarding variation among nations, females in the United States were nine times as likely to be murdered as females in Ireland during this period. Contrary to Verkko's predictions, females do not universally enjoy a protective advantage over males. Females in Australia, Canada, Finland, and the United States were between two and three times more likely to be murdered than males in Denmark, England and Wales, and the Netherlands.

Despite substantial changes in homicide rates over time, the relative ranking of nations remained quite stable from 1950 to 1980. The rank-order correlation between the total homicide rate in 1950 and 1980 for the 16 nations with increasing rates (excluding Japan and Italy) is .92. The correlation is .65 when Japan and Italy are added. Similar to the delinquent neighborhoods in Shaw and McKay's (1942) portrayal, this group of nations appears to have enduring propensities to violence despite changes in the composition of their populations.

Child and Adult Homicide Rates, 1965-1980

Previous cross-national studies have found little association between annual rates of child homicide and total homicide (Fiala and LaFree 1988; Christoffel, Liu, and Stamler 1981). My data suggest a different conclusion, possibly because they are drawn from several years, rather than a single year.⁹ Paralleling the trend for total homicide rates, average homicide rates for the different age groups (except infants) increased between 1965 and 1980 (bottom panel of Table 1). Similarly, international stability is seen in the rankings over nations of the homicide rates

female labor force participants with husbands present plus the number of non-husband-wife households to the total number of households.

⁸ The 1900-1980 time period was used because war was a rare event in recent years and these measures would have been highly skewed as a result.

⁹ In several of these 18 nations, annual homicides in certain age groups is quite small. In 1974, for example, ten of the nations had fewer than five infant homicides, and 12 had fewer than five homicides of children aged 1 to 4. Even after aggregating data over five-year periods, some age-specific rates are based on less than 25 victims.

Table 1. Mean Sex- and Age-Specific Homicide Rates, 18 Developed Democracies*

Country/ Year	1950 - 1980		1965 - 1980				
	Males (1)	Females (2)	Males > 14 (3)	Females > 14 (4)	Children 5-14 yrs (5)	Children 1-4 yrs (6)	Infants < 1 yr (7)
Australia	2.12	1.34	2.30	1.41	.51	1.06	3.00
Austria	1.54	1.15	1.67	1.20	.48	.89	6.81
Belgium	1.30	1.01	1.53	1.13	.33	.73	.98
Canada	2.83	1.49	3.28	1.55	.58	1.04	3.17
Denmark	.76	.85	.75	.78	.65	.83	2.21
England & Wales	.89	.72	.88	.71	.28	.99	4.30
Finland	4.03	1.37	4.89	1.51	.55	.89	6.92
France	1.18	.70	1.39	.79	.26	.48	1.92
W.Germany	1.43	1.03	1.48	1.03	.56	1.03	5.59
Ireland	.93	.40	1.09	.43	.10	.18	2.05
Italy	2.03	.61	2.45	.69	.24	.22	.80
Japan	1.50	.94	1.34	.74	.80	2.26	7.64
Netherlands	.91	.47	1.00	.51	.21	.43	1.63
New Zealand	1.50	1.00	1.46	.83	.38	1.71	4.49
Norway	1.03	.56	1.20	.59	.23	.35	1.80
Sweden	1.33	.82	1.41	.83	.44	.84	1.36
Switzerland	.95	.82	1.04	.81	.51	.75	4.57
United States	14.05	3.83	14.92	4.18	.99	2.11	5.40
<i>All 18 Nations</i>							
Mean	2.00	.97	2.45	1.10	.45	.93	3.65
S.D.	2.54	.67	3.24	.83	.24	.62	2.85
1950	1.79	.88	—	—	—	—	—
1955	1.63	.82	—	—	—	—	—
1960	1.59	.81	—	—	—	—	—
1965	1.67	.88	1.93	.88	.41	.81	4.34
1970	2.24	1.05	2.54	1.09	.43	.96	3.90
1975	2.46	1.13	2.67	1.16	.46	.96	3.56
1980	2.58	1.19	2.65	1.25	.49	.97	2.81

* All rates are calculated per 100,000 persons per year in the appropriate sex or age group, except rates for infants, which are calculated per 100,000 live births per year.

Source: World Health Organization, various years.

for the different age groups. Correlations over nations, shown in Table 2, are moderately strong for the comparison between adult females and children aged 1-14 as contrasted with the comparison between adult males and children. One reason for the stronger relationships between rates for adult females and children is their predominantly primary-group character (Daly and Wilson 1988).

Comparing age groups, homicide rates for children are consistently lower than those for adults or infants. In 17 of the 18 nations (Japan is the exception), children aged 1-14 are less likely to be murdered than persons over 14 or infants. Homicide rates for infants are notable both for their level and their trend. Rates for infants are highest of all the age groups in each

nation, except the United States, Sweden, and Italy. The rate for infants, unlike the other age groups, decreased markedly between 1965 and 1980.¹⁰

RESULTS OF A MULTIVARIATE ANALYSIS

The Dataset and Methods of Estimation

Observations on the dependent and independent variables are pooled for the multivariate analysis. For the analysis of sex-specific homi-

¹⁰ There is nothing in WHO publications to suggest reporting practices for infant homicides changed over time so as to produce this unique trend. If reporting

cide rates, pooling across 18 nations and seven time points yields a sample size of 126. For the age-specific analysis, the sample size is 72 (18 nations at four time points). Analyzing pooled data has the advantage of allowing a more stringent test of the generality of the model, because the model must account for variation through time and among nations in homicide rates. Moreover, the effects of idiosyncratic events or processes are minimized in a pooled analysis.

The model is estimated with a modified generalized least squares (MGLS) procedure that corrects for both serial correlation and heteroskedasticity, and assumes a single, first-order autoregressive process.¹¹ The procedure calculates an autocorrelation coefficient and a cross-sectional correlation from the residuals of an OLS regression. These estimates are used to remove the autoregressive component and reweight the final MGLS estimates. I estimated both linear-additive models and models on log-transformed data. Log transformation adjusts for the skewed distributions of some of the variables, and is a common procedure in tests of other models (e.g., Cohen and Land 1987a). Since results are similar for both models, only results for the logged data are reported here. To determine whether the results are sensitive to the inclusion of particular nations, each model was re-estimated excluding a different nation from the sample each time. The results are robust across different samples.

Post-war trends in three of the five time-varying indicators of the structural and cultural contexts predicting homicide rates follow a u-shaped curve similar to that for homicide rates (Table 3). Divorce rates, the ratio of female workers to households, and the relative size of the 15-29 year old population declined to a low point in 1960 and increased thereafter to 1980. In contrast, mean welfare spending increased and the number of nations with the death penalty decreased. The multivariate analysis com-

of infant homicides improved over time — a more plausible hypothesis given the growing attention to child abuse in developed nations during this period — precisely the reverse trend would be expected.

¹¹ In the first-order autoregressive model, the residuals are a function of values at only the previous time point and an autoregressive component unique to each nation. The autocorrelation function declines approximately geometrically and approaches zero by the fourth lag, which is consistent with a first-order process.

Table 2. Zero-Order Correlations Between Adult and Child Homicide Rates, 18 Developed Democracies, 1965-1980*

Age Group	(1)	(2)	(3)	(4)
(1) Males > 14	—			
(2) Females > 14	.91	—		
(3) Children 5-14	.52	.66	—	
(4) Children 1-4	.41	.56	.75	—
(5) Infants < 1	.22	.33	.51	.61

* Correlations are based on 5-year mean rates (shown in Table 1) that have been log transformed (base 10).

brates these time-varying measures with the time invariant measures (income inequality, ethnic heterogeneity, and battle deaths¹²) in separate analyses of sex- and age-specific rates.

Results for Female and Male Homicide Rates, 1950-1980

The risk factors predicting homicide rates do not appear to vary by the sex of the victim (columns 1 and 2, Table 4). Given the extremely high correlation between female and male rates, these results are not surprising. The model explains a substantial amount of the variance in homicide rates of both females and males ($R^2 = .72$). As predicted, the indicators of material deprivation, weak social integration, and exposure to official violence are associated with significantly higher risks of homicide for both sexes. For both sexes, the divorce rate is by far the most important risk factor, as indicated by the standardized coefficients.

Among the demographic indicators, the effect of the ratio of the female labor force to households, though positive for both sexes, is significant only for females. The post-war shift in routine activities away from households appears to put women at a greater risk of homicide. Contrary to prediction and previous research, the percentage of the population aged 15-29 has no effect on the homicide rates of either sex. (Alternative specifications of the age range did not alter this conclusion.)

¹² Multicollinearity precluded including both number of wars and battle deaths in the same model. Furthermore, the effect of number of wars, while positive, was trivial for most homicides. Consequently, only the results for battle deaths are reported. A cultural orientation to violence may be better tapped by the costliness of war (in terms of lives lost) rather than the number of wars.

Table 3. Descriptive Data for Independent Variables Predicting Homicide Rates, 18 Developed Democracies^a

Independent Variable	All Years		1950	1955	1960	1965	1970	1975	1980
	Mean	S.D.							
<i>Material context</i>									
Welfare spending	12.21	5.78	6.93	8.93	7.07	10.95	12.66	16.86	19.39
Income inequality ^b	38.33	3.38	—	—	—	—	—	—	—
<i>Integrative context</i>									
Divorce rate	1.25	.93	.87	.78	.78	.93	1.41	1.88	2.11
Ethnic heterogeneity ^b	23.70	21.71	—	—	—	—	—	—	—
<i>Demographic context</i>									
Female workers/ households	45.04	11.61	45.47	44.69	43.49	43.86	44.00	45.62	49.97
Percent aged 15-29	22.57	2.12	22.86	21.22	20.99	22.39	23.01	23.73	23.82
<i>Cultural context</i>									
Battle deaths ^b	14,407	17,890	—	—	—	—	—	—	—
Death penalty	.46	.50	.56	.56	.56	.44	.39	.39	.33

^a Data are not log transformed.^b These measures vary only among nations, not over time.*Results for Child and Adult Homicide Rates, 1965-1980*

The relative importance of risk factors varies between children and adults, and a number of these relationships coincide with expectations (columns 3 through 7, Table 4). The results for females and males aged 14 and older for 1965-1980 essentially replicate those for females and males of all ages for 1950-1980. In the more recent period, however, the difference between the sexes in the effect of the ratio of female workers to households is significant, providing even stronger support for the notion that the dispersion of activities away from family households has put women at greater risk.

Looking at the two indicators of the material context, welfare spending appears as the only variable with significant effects for all age groups. This effect, which is strongest at the youngest ages, follows predictions and is consistent with Fiala and LaFree's (1988) cross-national analysis of child homicide rates. Also consistent with predictions, income inequality is associated with high homicide rates of adults but not children. Apparently absolute deprivation is a more general risk factor than is relative deprivation.

Turning to the integrative context, the prediction that weak inter-group integration, here measured by ethnic and linguistic heterogeneity, is a significant risk factor for adults, but not for children is supported. A similar but unanticipated pattern emerges for divorce rates. While adults and older children face significantly higher risks where divorce rates are higher, this is not the case for children under the age of five. This runs counter to the prediction that family disruption is associated with higher rates of homicide at all ages. It also challenges popular conceptions and the predictions of evolutionary psychology (Daly and Wilson 1988) concerning the dangers to young children posed by divorce. The strongest effects of the shift away from nuclear family-based activities appears among children. The greater the ratio of women in the labor force to households, the greater the rates of child homicide, a result also found by Fiala and LaFree (1988). The second indicator of the demographic context, the relative size of the young adult population, is not associated with child homicide rates, as was predicted.

Finally, a cultural orientation to violence is associated with higher homicide rates among adults and children, though the effects are less

Table 4. MGLS Estimates from Models of Sex- and Age-Specific Homicide Rates, 18 Developed Democracies^a

Independent Variable		1950 - 1980		1965 - 1980				
		Males All Ages (1)	Females All Ages (2)	Males > 14 (3)	Females > 14 (4)	Children 5-14 yrs (5)	Children 1-4 yrs (6)	Infants < 1 yr (7)
<i>Material context</i>								
Welfare spending	b	-.22***	-.12***	-.27**	-.10*	-.13**	-.25**	-.64***
	s.e.	.06	.03	.10	.05	.04	.07	.14
	B	-.22	-.22	-.21	-.14	-.33	-.35	-.52
Income inequality	b	1.77***	.68**	2.16***	.66*	.34	.39	.72
	s.e.	.43	.24	.56	.32	.23	.60	.73
	B	.32	.22	.36	.20	.19	.08	.12
<i>Integrative context</i>								
Divorce rate	b	.83***	.45***	1.01***	.47***	.15*	.17	-.03
	s.e.	.11	.07	.15	.08	.07	.11	.22
	B	.53	.51	.56	.47	.27	.16	-.02
Ethnic heterogeneity	b	.06*	.06***	.08*	.08***	.01	.01	.06
	s.e.	.03	.02	.04	.02	.02	.03	.05
	B	.13	.26	.17	.32	.04	.05	.14
<i>Demographic context</i>								
Female workers/households	b	1.14	1.75**	-.20	1.34*	2.15***	4.33***	4.93**
	s.e.	.98	.57	1.29	.65	.60	.98	1.86
	B	.08	.21	-.01	.14	.41	.45	.30
Percent aged 15-29	b	-.02	.00	-.35	-.09	-.03	.64	-.54
	s.e.	.25	.15	.43	.21	.20	.33	.64
	B	-.00	.00	-.05	-.02	-.02	.17	-.08
<i>Cultural context</i>								
Battle deaths	b	.03***	.01*	.03*	.02*	.00	.02*	.04*
	s.e.	.01	.00	.01	.01	.01	.01	.02
	B	.24	.16	.19	.20	.01	.27	.26
Death penalty	b	.11*	.06*	.12	.09*	.02	.06*	-.12
	s.e.	.05	.03	.08	.04	.03	.03	.12
	B	.12	.11	.12	.14	.07	.13	-.12
R ² (OLS)		.72	.72	.70	.73	.51	.59	.51
d.f.		117	117	61	61	61	61	61

*p < .05 **p < .01 ***p < .001

^a Data are log transformed (base 10).

general than predicted. Nations with a high number of wartime battle deaths tend to have higher homicide rates for infants, young children, and adults of both sexes. The presence of a death penalty is associated with higher homicide rates for adult females and young children. These results, as well as previous research, suggest that legitimate and illegitimate acts of violence may be part of a common cultural desensitization to or tolerance of violence.

Comparing the standardized coefficients in Table 4 (columns 3 through 7) reveals that the most important risk factors for children 14 and younger are welfare spending and the ratio of

female workers to households. Nations in which spending on social programs is more limited and in which more women work outside the home tend to have higher homicide rates for children. For persons over 14, family dissolution is by far the greatest risk factor.

DISCUSSION

The foregoing analysis suggests that the four structural and cultural contexts explaining total homicide rates in the United States are also important in other developed democracies. At one level, then, the model tested appears quite

general, rather than being limited to homicide rates of young males. Although the strength of effects varies, the direction of the effects of seven of the eight explanatory variables is the same, and consistent with predictions, for the homicide rates of adults and children. Only infanticides depart from this pattern. Nations with greater material deprivation, more cultural heterogeneity, more family dissolution, higher female labor force participation, and greater exposure to official violence generally have higher homicide rates.

At another level, some limits to the international generality of some well-accepted explanations of variations in homicide rates are evident. In particular, the demographic context of homicide is less general than suggested by prior research. A disproportionate number of teens and young adults was not associated with higher homicide rates for any age group, among these 18 nations. This is surprising since demographic explanations of trends in violent crime have been given considerable attention (e.g., Wilson and Herrnstein 1985) and have garnered substantial empirical support in the United States (but see Gartner and Parker 1988).¹³

Modifications of existing perspectives are suggested by the results found for female employment. The growth in female employment, a driving force in the movement of activities away from family-households according to the routine activity model, appears to be a less general risk factor since this variable was not associated with male homicide rates. This suggests that female labor force participation may influence homicide by raising the motiva-

tions for female and child homicide, rather than by weakening controls. Both micro-level research on family violence (Brown 1980) and macro-level research on child homicide (Fiala and LaFree 1988) apply motivational interpretations to the relation between women's employment and homicide.

Some differences from previous research in the effects of explanatory variables require cautious interpretation. The measures of income inequality and weak social integration — including divorce rates — are not strong risk factors for children. This indicates the etiology of child homicide may differ in ways that traditional sociological perspectives on homicide have not fully developed.¹⁴ Alternatively, the weak effects of some of the explanatory variables on child homicide could result from greater measurement error in child homicide rates. Homicides of young children may be more easily disguised or misclassified than homicides of adults. This possibility needs to be explored before ruling out the importance of some of the explanatory variables for child homicides.¹⁵

CONCLUSION

Explanatory variables derived from previous research were able to account for changes through time and among nations in homicide rates, supporting the basic generality of the model. This is the first evidence that homicide rates are related to divorce rates and spending on social programs between time periods, and

¹³ Nevertheless, age structure may have important effects on trends in homicide rates in some nations. Japan and Italy, the only two nations in the sample with lower homicide rates in the 1970s than the 1950s, are two examples. Along with West Germany, they were the only nations in which the percentage of the population aged 15-29 decreased during this period. Although variations in age structure do not predict variations in homicide in my model, it may be that a decrease in the percentage of young persons in the population was a necessary condition for a decrease in the homicide rate after the 1960s. In West Germany, the average homicide rate for males after 1967 was only 4 percent higher than the average rate prior to 1967, the smallest increase in the sample. These patterns suggest age structure may in fact be an important determinant of homicide rates in some nations, but in more complex ways than has been considered.

¹⁴ Other perspectives provide insights into risk factors that may be particularly important for child homicide. See Daly and Wilson (1988) and Fiala and LaFree (1988) for a review of risk factors featured, respectively, in evolutionary perspectives on infanticide and in the literature on child abuse.

¹⁵ The possibility of systematic measurement error in the reporting of child and infant homicide rates cannot be ruled out. If errors in reporting are systematically associated with the explanatory variables, observed estimates will be biased. The absence of effects for divorce rates or ethnic heterogeneity in child homicide could result if nations with high divorce rates or greater ethnic diversity consistently underenumerated child homicides. It seems less plausible that the significant effects for welfare spending, ratio of female workers to households, and battle deaths could be due to such systematic error, however, given the robustness of these effects across age groups.

that the ratio of female labor force participants to households and national war experiences are related to differing national homicide rates.

The model is general only within obvious limits: it appears to account well for variation in the aggregate risks of homicide in post-war developed democracies. It cannot speak to the importance of structural and cultural characteristics that are relatively constant in this group of nations during these years, such as level of economic development, democratic political structure, or value systems of post-industrial, secular society. Such characteristics may be crucial for explaining both differences in homicide rates between these and other nations, and changes in rates within these nations over longer periods of time. These are questions for future research.

The micro-level implications of the aggregate patterns revealed in this and other macro-level studies need to be explored in future research. Are all persons in populations with high divorce rates or unequal income distributions at higher risk of homicide, or are these risks borne primarily by members of disrupted families or by persons in the lower economic strata? Where more women work outside the home, do all women and children, or only working women and their children, face higher risks? From whom do these enhanced risks emanate — family members, strangers, the relatively deprived, the unattached? Answers to these questions would help identify the motivational and/or control mechanisms linking aggregate social characteristics to homicide rates.

Finally, researchers typically have allowed political boundaries to define the unit of analysis in macro-level research, and have ignored "Galton's problem" — the fact that political units (nations, states, cities) are not independent, as assumed by methods for estimating covariation. The boundaries for the different structural and cultural processes on which models of homicide rates are based also rarely coincide. Critiques of analyses that treat political units as distinct, autonomous, internally coherent entities (e.g., Tilly 1984) are especially relevant to phenomena linked to cultural variation, such as homicide. This argues for reconceptualizing the unit of analysis in macro-level research on homicide, as has happened in world-systems approaches in political sociology. Such reconceptualization can build on the considerable evidence about homicide risks from traditional macro-level research.

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ETHNIC DISCRIMINATION AND THE INCOME OF MAJORITY-GROUP WORKERS*

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Neo-classical economics suggest that workers belonging to a superordinate ethnic group gain from economic discrimination against members of a subordinate ethnic group. The Marxist perspective disagrees, contending that superordinate workers actually lose. When income differentials between Jews and Arabs across local labor markets in Israel are decomposed into "legitimate" and "discriminatory" components, the data lend support for the neo-classical perspective. However, the relationship between market discrimination and the income of superordinates is more complex than perceived by previous work on the topic. On the average, Jewish workers gain from economic discrimination against Arabs. But they do not gain equally. Such discrimination results in increased income inequality among Jewish workers, increasing the income share received by Jewish workers at the upper tail of the income distribution and decreasing the income share received by workers at the lower tail.

Students of social stratification agree that discrimination has detrimental consequences for the income of subordinate racial and ethnic groups. For example, blacks and Hispanics in the U.S. earn less than comparable whites, and Arabs in Israel earn less than Jews with similar characteristics. Although most of the discrimination literature is concerned with the costs of discrimination for minorities, a substantial literature focuses on its impact on members of the superordinate group. For example, in the U.S., a long-standing question has been whether whites gain or lose financially from racial discrimination against black workers.

The two main theoretical positions on this issue are seemingly incompatible. One is derived from neo-classical economics, the other from Marxist class analysis. Neo-classical economics contends that discrimination is economically irrational — while employers underpay minority workers, they overpay majority workers. Thus, discriminatory employers lose from discrimination. The beneficiaries of such discrimi-

nation are employees from the superordinate group (Arrow 1973; Becker 1957). Marxists take issue with this position. Viewing discrimination as one strategy of the capitalist class to divide and conquer the working class, they claim that only employers gain from discrimination. Workers, including those who belong to the superordinate group, actually lose (Reich 1971, 1978).

Previous empirical research that attempts to resolve this theoretical controversy has so far produced inconsistent and even conflicting findings (cf. Beck 1980). While several researchers have lent empirical support to the neo-classical position (e.g., Villemez 1978), others have provided findings congruent with Marxist arguments (Reich 1971, 1978; Bonacich 1972; Szymanski 1976, 1978). This paper contributes to the ongoing debate by analyzing the impact of labor market discrimination against Arabs in Israel on the economic well-being of Jewish workers.

PREVIOUS RESEARCH

As part of his path-breaking Marxist analysis, Reich (1971) examined the effect of discrimination on income inequality among whites across the 48 largest U.S. SMSAs in 1960. His measures of inequality were the Gini coefficient and the share of income received by the top one percent of white families. His measure of discrimination ("racism") was the ratio of black to

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white median family income. The lower the numerical value of this ratio, argued Reich, the higher the combined effect of direct labor market discrimination, as well as indirect discrimination (e.g., discrimination in education and housing) against blacks in the community. The data analysis revealed that as discrimination increases so does inequality among whites, thus supporting the Marxist contention that discrimination reduces both black and white workers' income.

Using 1970 census data, Szymanski (1976) measured discrimination as the ratio of black to white male median earnings (rather than Reich's family income), thus focusing more closely on labor market processes (cf. Villemez 1978). Szymanski also substituted the median earnings of white males for one of Reich's measures of income inequality (income share of top 1 percent), arguing that it captures more directly the notion of white economic gain or loss. Controlling for several key variables, Szymanski's empirical analysis yielded results similar to Reich's, again supporting the Marxist analysis.

Villemez (1978) questioned the validity of both Reich's and Szymanski's findings on the grounds of a series of "severe conceptual and methodological problems" (p. 772). First, he pointed out a problem of multicollinearity among key variables. Second, he maintained that median income and the Gini coefficient are inadequate indices of white economic well-being. Better measures are the proportion of white workers earning over \$15,000 and less than \$5,000 in 1970. However, far more troublesome in Reich's and Szymanski's analyses, according to Villemez, were their measures of discrimination ("racism"). He argues that the Index of Net Differences (Lieberson 1976) is a better proxy for black/white income inequality than the ratio of black to white earnings or income. By reanalyzing the 1970 census data (utilizing different measures for both discrimination and economic well-being) Villemez demonstrated that whites appear to gain from both the presence of blacks and from black subordination.

The confusion between these two bodies of research was recently captured in a comprehensive analysis by Beck (1980). Using longitudinal data and the multitude of measures suggested by previous research, Beck failed to support the Marxist view, but provided only weak support for the neo-classical position. Beck's conclusion is equivocal: "While this study does not

invalidate Reich's and Szymanski's work, it at least calls their findings into serious question" (p. 164).

It is not clear whether the confusion surrounding the findings is a function of different measures, different methodologies, or both. What seems clear, however, is that previous research used measures of discrimination that are inadequate for testing the two theories. All have employed measures based on some aggregate ratio of black/white income and assumed that this ratio is determined solely by pre-market and market discrimination. This is not necessarily so. The ratio could reflect, for example, different preferences for work and leisure between the races that have nothing to do with pre-market discrimination, let alone market discrimination. Even if these ratios capture overall discrimination (market and premarket), they cannot distinguish between the two components. Yet neo-classical economics confines its theoretical focus to the effects of *market* discrimination (i.e., income differentials between the races that are *not* a function of their different levels of human capital) on the economic well-being of the superordinate group. It is *not* concerned with the effects of *pre-market* discrimination.

A more conventional measure of market discrimination that takes into account the relevant characteristics (e.g., education) of the two groups is necessary for testing the neo-classical prediction. In the analysis that follows we use individual-level data to estimate such measures in order to properly address the neo-classical thesis.

DATA SOURCE

Israel provides an especially illuminating setting to examine the impact of market discrimination on the income of a superordinate group. The most meaningful ethnic split in Israeli society is between the Jewish majority and the Arab minority. Previous research has repeatedly demonstrated that Jews in Israel are superordinate to Arabs in every aspect of social and economic status (Peres 1971; Simon 1971; Semyonov 1988). Israeli Arabs comprise about 17 percent of the population. They have fewer years of schooling than Jews, hold lower status occupations, and earn less than Jews with comparable characteristics. While the degree of residential segregation in Israel is extreme, most Arabs find employment in Jewish communities (Semyonov 1988).

The 1983 Israeli census of population provides detailed demographic and socioeconomic information on individuals as well as identification of community of employment. It is thus possible to construct data files on communities in which both Jews and Arabs are employed in order to examine the effect of market discrimination against Arabs on the economic well-being of Jews. There are 33 Jewish communities (or aggregates of adjacent communities) that we view as local labor markets with a substantial number of Arab workers.¹ The availability of data on individuals at the community level makes it possible to estimate both mean characteristics and regression equations predicting income for Jewish and Arab workers employed in each community, in order to arrive at indicators of market discrimination and economic well-being.

MEASURING MARKET DISCRIMINATION

Market discrimination is defined as the portion of the income gap between the superordinate and the subordinate groups that does not stem from differences in human resources or human capital characteristics (the "legitimate" gap), but rather from group membership and differential returns on relevant human capital resources. In order to estimate market discrimination, the total income gap between groups is decomposed into "discriminatory" and "legitimate" portions. There are several parallel models for decomposing mean differences between groups via the use of regression equations (e.g., Duncan 1968; Oaxaca 1973; Jams and Thornton 1975). In the present analysis, we applied the decomposition technique of regression equations suggested by Jones and Kelly (1984). The decomposition model is written:

$$Y_J - Y_A = [(a_J - a_A) + \sum (b_j - b_A) X_A] + \sum b_A (X_J - X_A) + \sum (b_j - b_A)(X_J - X_A) \quad (1)$$

where Y is the mean income of the J (Jewish) and A (Arab) groups, X is the mean value of the human resources antecedent variables included in the equation, b 's are regression coefficients, and a 's are the respective intercepts.

The model identifies three components. The first is the unexplained difference between the groups that reflects both group membership and differential returns on human resources. The second component is the portion of the gap due to differences in human resources, and the third is the interaction effect of jointly changing both mean resources and coefficients over the effect of changing them one at a time. Only the first component represents market discrimination while the other two capture the "legitimate" income gap between the groups. Market discrimination (MD) is thus defined as:

$$MD = [(a_J - a_A) + \sum (b_j - b_A) X_A] \quad (2)$$

Two regression equations, one for Jews and one for Arabs, were estimated in each of the 33 communities to calculate the coefficient of market discrimination. In each equation, monthly income was taken as a function of years of formal education (EDUC), age in years (AGE), age squared (AGESQ), and weekly work hours (HOURS).² For each community, the equations were decomposed to obtain the estimate of market discrimination as defined in equation 2. Thus, MD measures the portion of the income gap between Jews and Arabs employed in the same community that is attributable to group membership and differential returns on hours of work, education, and age. Each community was then assigned a value of market discrimination that was used in the analysis as a characteristic of the local labor market. The magnitude of MD was measured in Israeli shekels, and as a percentage of the total income gap between the two groups.³

¹The 20/100 Israeli Census is a systematic random sample of households stratified within region of residence. The present analysis focuses on 144,043 employed males in the labor force between 25 and 64 years of age. The target population is Jews and Arabs who are employed in Jewish (or mixed) communities. There are 33 communities (or aggregates of adjacent communities), each of which forms a local labor market. In each market there are at least 30 Arab employees. Women are excluded from the analysis because very few Arab women commute to work in Jewish communities (Semyonov 1988). Six communities were excluded from the analysis because the number of Arabs employed was too small.

² Age, education, hours, and occupation are the only relevant individual characteristics available in the Israeli census.

³To test reliability, we also estimated market discrimination using the procedure suggested by Duncan (1968). Using this measure of market discrimination, we obtained virtually the same results.

Table 1. Means, Standard Deviations, and Correlations Among Variables Included in the Analysis: 33 Local Labor Markets, Israeli Labor Force, 1983

Variable	Mean (S.D.)	Variable										
		1	2	3	4	5	6	7	8	9	10	11
1. Mean Income (Jews)	38656 (3730)	—										
2. Mean Income (Arabs)	22834 (3479)	.079	—									
3. Income Gain (Jews)	811 (3167)	.894	.080	—								
4. Market Discrimination (in Israeli shekels)	6565 (4524)	.461	-.611	.523	—							
5. Market Discrimination (% of total gap)	39.19 (17.36)	.200	-.410	.282	.858	—						
6. NEWMD (in Israeli shekels)	6467 (4245)	.477	-.551	.527	.980	.862	—					
7. NEWMD (% of total gap)	39.37 (18.28)	.183	-.198	.249	.705	.916	.783	—				
8. TOP5	16.4 (2.4)	.424	-.258	.387	.552	.409	.560	.359	—			
9. BOTTOM20	7.3 (.8)	-.511	.131	-.382	-.447	-.420	-.489	-.443	-.629	—		
10. % Arab	7.14 (5.79)	-.184	-.073	-.201	-.044	.161	.142	.363	-.092	.056	—	
11. % manufacturing	27.82 (13.0)	-.140	-.091	-.086	.012	.076	.054	.155	-.200	.262	.374	—
12. Size	6303 (8029)	.403	-.167	.172	.126	-.005	.095	-.074	.326	-.527	-.215	-.272

Note: See text for definition of variables.

ESTIMATING ECONOMIC WELL-BEING

The economic well-being of Jewish workers in each community was estimated by two indicators — income level and income gain. The first indicator, mean income of Jewish workers in the community, is straightforward and similar to those used in previous studies. The second indicator focuses on income of Jewish workers in the community, net of their human resources. It represents the component of income that appears to be determined by community and will be referred to as a measure of income gain. The two indicators are not mutually exclusive — the correlation between them exceeds .9.

The indicator of income gain was obtained using Duncan's (1968) model of indirect standardization. By forcing the mean socioeconomic characteristics of Jewish employed men (i.e., education, age, age squared, and weekly hours of work) of each community through the regression equation predicting income for the

total Jewish male labor force, it is possible to estimate the expected income of workers in the community had their income been determined exactly like the total Jewish labor force. The deviation of observed mean income from expected mean income represents the amount of income workers "gain" or "lose" in the community relative to the total labor force, net of their human resources. The computation of the indicator of income gain was performed according to the following equation:⁴

$$\text{GAIN} = \bar{Y}_i - \hat{Y}_i = \bar{Y}_i - [-80801 + 3298 \text{ AGE}_i - 33 \text{ AGESQ}_i + 2740 \text{ EDUC}_i + 263 \text{ HOURS}_i] \quad (3)$$

where \bar{Y} and \hat{Y} are observed and expected mean

⁴ The equation according to which the computation was performed is that estimated for the total Jewish male labor force age 25 - 64.

incomes of workers in the i^{th} community and AGE, AGESQ, EDUC and HOURS are the mean value of those variables in the i -th community. We refer to this measure as income "gain," keeping its operational definition in mind. Positive values represent relative net "gain" of income while negative values indicate net "loss."

THE RELATIONS BETWEEN MARKET DISCRIMINATION AND INCOME GAIN

Table 1 contains the means, standard deviations, and correlations among the 12 variables used in this analysis of 33 communities. The mean income of Jewish workers is substantially higher than that of Arab workers, and there is a considerable variation in the income level of each of the two groups across local labor markets. Furthermore, on the average, nearly forty percent (39.19) of the income gap between the groups can be attributed to *differential* returns on human resources and group membership (i.e., market discrimination).

The zero-order correlation coefficients in the top five rows of Table 1 lend support to theoretical expectations derived from the neo-classical model. Market discrimination (in Israeli shekels) is positively related to both mean income (.461) and income gain of Jewish workers (.523). Similar results are obtained defining market discrimination as percentage of the total gap — the correlation with income gain is .282, and with mean income is .200. Apparently, Jewish workers tend to gain income in places where market discrimination against Arab workers is more pronounced.

From a theoretical viewpoint, market discrimination is the key independent variable explaining the income gain of Jewish workers. Nevertheless, the sociological literature underscores several other community characteristics that are central for understanding both income level of residents and socioeconomic differentials between ethnic groups, most notably size of the labor market, ethnic composition, and industrial structure (e.g., Frisbie and Niedert 1977; Semyonov, Hoyt and Scott 1984; Villemez 1978). Thus, it is important to control for these community attributes when examining the effect of market discrimination against Arabs on the economic gain of Jewish workers. In the present research, ethnic composition is measured by the percentage of Arab workers (% Arab) in the community work force; size of the

Table 2. Regressions Predicting Two Measures of Economic Well-Being of Jewish Workers in 33 Israeli Communities (Standard Errors in Parentheses)

Variable	Mean Income		Income Gain	
	(1)	(2)	(3)	(4)
Market Discrimination (in Israeli shekels)	.352*** (.127)		.367*** (.110)	
Market Discrimination (% of total gap)		48.2 (36.3)		58.1* (32.1)
% Arab	-85.9 (107)	-91 (118)	-116 (92)	-125 (104)
Size	.148* (.075)	.173** (.081)	.048 (.064)	.050 (.072)
% manufacturing	-2.5 (48)	-.88 (53)	.80 (42)	2.2 (47)
Constant	36095	36349	-946	-952
R ²	.352	.222	.327	.157

* $p < .10$ ** $p < .05$ *** $p < .01$

labor market is the number of persons employed in the community; and industrial structure is defined as the percentage of the work force employed in manufacturing industries (% *manufacturing*).⁵

In the following analysis, a series of regression equations incorporating community characteristics is estimated. In equations 1 and 2, mean income of Jewish men is taken first as a function of market discrimination measured in Israeli shekels (equation 1) then as a function of market discrimination as percent of the total gap (equation 2). In equations 3 and 4, income gain is the dependent variable measuring well-being while market discrimination in Israeli shekels and in percentage terms, respectively, are included in the set of the independent variables.

The findings revealed by the regression analysis (see Table 2) are consistent with the previous correlation analysis. The selected community characteristics do little to reduce the benefit to Jewish men of market discrimination against Arabs. These findings provide support for the neo-classical view. In all equations, the effect of the market discrimination variables when expressed in Israeli shekels is positive and substantial. When expressed as percentage of

⁵ The sample size of the community male work force ranges between 455 and 33,440. Note also that income of Jewish workers is related positively to size and negatively to manufacturing employment in the community (see Table 1).

the income gap it remains positive and is sometimes significant. Apparently, in labor markets where Arabs "pay" increasing costs of economic discrimination, Jewish workers enjoy higher income in both absolute and relative terms.

THE ROLE OF OCCUPATIONAL DIFFERENTIATION

The positive effect of market discrimination against Arabs on the economic gain of Jewish workers may result from the extreme occupational segregation between the groups.⁶ Arab workers, especially those employed in Jewish places, are heavily concentrated in low-status manual and service occupations. They are not competing with Jews for high-status, rewarding jobs (Semyonov 1988). According to the "overflow thesis," their presence in the labor market may enable Jews to abandon the least-desirable occupations and to "flow" in disproportionate numbers to prestigious and rewarding jobs (e.g., Glenn 1966; Frisbie and Niedert 1977; Spileman and Miller 1977; Semyonov et al. 1984).

To examine the role of occupational segregation, we re-estimated market discrimination, taking into account the difference in occupational status between Jews and Arabs. The new estimates were obtained by applying Jones and Kelly's (1984) decomposition procedure to regression equations predicting income of Jews and Arabs as a function of age, age-squared, education, hours of work *plus* occupational status⁷ for each of the 33 local labor markets. These estimates of market discrimination (NEWMD) represent the portion of the income gap between Jews and Arabs attributable to group membership and differential returns on education, age, hours of work, as well as on *occupational status*.

Whether measured in Israeli shekels or as percentage of the income gap, these new estimates of market discrimination were positively correlated with both average income and income gain of Jewish workers. The zero-order correlations between the variables range between .527 and .183 (see Table 1). Thus, even when

Table 3. Regressions Predicting Two Measures of Economic Well-Being of Jewish Workers in 33 Israeli Communities, Using NEWMD* (Standard Errors in Parentheses)

Variable	Mean Income		Income Gain	
	(1)	(2)	(3)	(4)
NEWMD (in Israeli shekels)	.416*** (.132)		.417*** (.115)	
NEWMD (% of total gap)		58.5 (36.0)		64.0* (31.9)
% Arab	-.117 (105)	-.134 (122)	-.146 (91)	-.169 (108)
Size	.147* (.072)	.176** (.080)	.024 (.063)	.053 (.071)
% manufacturing	-3.42 (47)	-1.12 (52)	.42 (42)	2.16 (46)
Constant	35967	36230	-996	-895
R ²	.389	.244	.358	.176

* $p < .10$ ** $p < .05$ *** $p < .01$

* NEWMD (market discrimination) incorporates differences in occupational status between Arabs and Jews. See text for details.

considering the variation in occupational status between Jews and Arabs, the income of Jewish workers tends to be higher in labor markets characterized by higher levels of market discrimination against Arabs.

Table 3 displays a series of regression equations predicting average income (equations 1 and 2) and income gain (equations 3 and 4) of Jewish workers using NEWMD and community characteristics. In equations 1 and 3, NEWMD is expressed in terms of Israeli shekels. In equations 2 and 4, NEWMD is measured as the percent of the income gap between Jews and Arabs. The results lend further support to the neo-classical model. In all equations, the effect of market discrimination on the income level of Jewish workers is positive (and significant in all but equation 2) — the income of Jewish workers tends to be higher in communities where market discrimination is high and this cannot be explained by the occupational segregation between Jews and Arabs.

MARKET DISCRIMINATION AND INCOME INEQUALITY

The findings presented thus far demonstrate that, on average, Jewish workers gain income in communities where economic discrimination against Arabs is more pronounced. These find-

⁶ The index of dissimilarity across 323 occupational categories is 50. That is 50 percent of either group must change occupations in order to reach equality in the occupational distributions.

⁷ Occupational status was measured on Tyree's (1981) index for occupations in Israel.

ings, however, do not tell us whether Jewish workers gain equally from such discrimination. Theoretical models such as those of the split labor market (Bonacich, 1972) or the competition hypothesis (Hodge and Hodge, 1965; Snyder and Hudis, 1976) lead us to expect a differential effect of discrimination on the income of the superordinate group. These models suggest that because of discrimination, members of subordinate groups have to supply their labor at a lower cost. This may lead to the deterioration of working conditions of those majority members who compete with minorities in the same labor market for the same jobs (mostly low-status, low-paying jobs). In a similar vein, the overflow thesis implies that the presence of minority members in the labor market benefits mainly members of the majority group at the top of the social system.

To examine these hypotheses we computed two measures of income inequality among Jewish workers. The first measure is defined by the share of all Jewish income received by the top 5 percent of Jewish workers in each local market (TOP5). The second measure represents the share of income received by the bottom 20 percent of Jewish workers in the locality (BOTTOM20).⁸ If high-paid workers gain disproportionately from economic discrimination against minorities, MD (market discrimination) should exert a positive effect on TOP5 and a negative effect on BOTTOM20.

Table 4 contains the results of this analysis. In equations 1 and 2, TOP5 is taken as a function of market discrimination with other community characteristics entered as controls. In equation 3 and 4, BOTTOM20 is taken as a function of market discrimination with the same controls present.⁹

The regression analysis firmly supports the hypothesis that high-paid workers gain disproportionately from market discrimination against

Table 4. Regressions Predicting Share of Income Received by Jewish Workers at the Top 5% and the Bottom 20% of the Income Distribution in 33 Israeli Communities (Standard Errors in Parentheses)

Variable	TOP 5%		BOTTOM 20%	
	(1)	(2)	(3)	(4)
NEWMD (in Israeli shekels)	.310*** (.082)		-8.34*** (2.52)	
NEWMD (% of total gap)		58.8** (22)		-23.0*** (5.8)
% Arab	-28.8 (65)	-58.4 (75)	-5.81 (20)	10.2 (20)
Size	.065 (.045)	.086* (.049)	-4.34*** (1.38)	-4.90*** (1.3)
% manufacturing	-26.1 (29)	-24.9 (32)	10.9 (8.92)	10.9 (8.43)
Constant	14954	14690	7854	8142
R ²	.418	.299	.500	.553

* $p < .10$ ** $p < .05$ *** $p < .01$

Note: Coefficients were multiplied by 10³.

minority workers. The impact of market discrimination on TOP5 is positive, significant, and stronger than any other term in equations 1 and 2. The effect of market discrimination on BOTTOM20 is negative and significant. Indeed, in all four equations the effect of market discrimination on income inequality is over twice the size of its standard error. Apparently, in labor markets where discrimination against Arabs is more pronounced, the income share of Jewish employees at the top of the income distribution is larger while the income share of Jews at the bottom of the distribution is smaller.¹⁰

CONCLUSION

The main purpose of the research reported here was to examine whether members of superordinate ethnic groups gain or lose from labor market discrimination against workers of a subordinate ethnic group. The data analysis lends support to a neo-classical model, which suggests that majority workers benefit from such economic discrimination. However, it also demonstrates that the relationship is complex, because discrimination against Arab workers enlarges

⁸ Since the data are confined to employed men and exclude the self-employed and unemployed, the top 5 percent are mostly salaried professionals and managers, and the bottom 20 percent are mostly unskilled workers.

⁹ Although market discrimination is viewed here as a determinant of inequality, the possibility that inequality may influence market discrimination cannot be rejected. Since our main interest, however, is explaining inequality, it is treated here as the dependent variable. The determination of the causal order between these two variables is beyond the scope of this analysis.

¹⁰ This finding is consistent with other studies suggesting that income gains are not equally distributed; workers at the top are likely to gain more than workers at the bottom (Villemez and Wiswell 1978; Freeman 1973).

the income inequality of Jewish workers. It increases the income share of Jewish workers in the upper tail of the income distribution and decreases the income share of workers in the lower tail of this distribution. Ironically, those who benefit most from economic discrimination against minorities are the workers who are least likely to compete with them. Our findings suggest that when more than one group of workers stands to benefit from economic discrimination against minorities, those at the top of the social system benefit more than those at the bottom.

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SEGREGATION, TRACKING, AND THE EDUCATIONAL ATTAINMENT OF MINORITIES: ARABS AND ORIENTAL JEWS IN ISRAEL*

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In recent cohorts, Arab-Israeli men attend post-secondary schools at higher rates than Oriental Jews. This pattern has emerged despite the socioeconomic disadvantage of Arabs, the small share of resources allocated to Arab education, and government efforts to advance the attainment of Oriental Jews. Two explanations for this pattern are tested and corroborated: First, Arabs benefit from a separate school system, whereas Oriental educational levels are depressed because of competition with more privileged European-origin Jews in an integrated school system. Second, at the secondary level Oriental Jews are tracked disproportionately into vocational tracks which divert them from college education, while in the segregated Arab system secondary education is predominantly college preparatory. The paper concludes by suggesting that tracking, used to separate ethno-cultural groups within a school system and depress their educational attainment, is not "necessary" when the groups are residentially segregated, when more direct means of social exclusion can be employed, and when members of the dominant group are shielded from minority competition in the job market.

In ethnically stratified societies, privileged ethnic groups usually attain higher average educational levels than members of subordinate ethnic groups. Several factors underlie this pattern. First, educational attainment is enhanced by privileged social origins, and students from advantaged ethnic origins benefit from the educational, occupational and economic attainments of their parents. Second, dominant social groups use the educational system to secure their privilege across generations. By virtue of their cultural and political domination, educational selection is based on criteria which favor their offspring (Collins 1979). Third, dominant ethnic groups may control the political processes by which school systems are funded and structured and are able to promote those schools or educational districts attended by their children (Lieberson 1980,

Chapter 6). As a result of these factors, students from advantaged social origins do better in school and obtain more schooling which, in turn, enables them to obtain more desirable occupations.

In industrialized societies, successive cohorts are staying in school longer. As the completion of primary and secondary education becomes universal, these levels of schooling lose their allocative role in the occupational attainment process since educational credentials are valued in the labor market only if they are scarce. Thus, higher education becomes increasingly important for occupational attainment (Featherman and Hauser 1978; Kraus and Hodge, forthcoming).

When subordinate groups succeed in penetrating the educational hierarchy and attain a given level of schooling in large numbers, the dominant groups move up to the next level, preserving their relative advantage. In some cases, the disadvantage of subordinate minorities in the educational attainment process is perpetuated by tracking or other forms of organizational differentiation (Shavit 1984; Karabel 1972). The availability of non-academic tracks at the secondary level enables minorities to attain secondary education but also serves as an obstacle to advancement into higher educa-

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tion. Consequently, ethnic differences in educational attainment should be most pronounced at the highest levels of the educational hierarchy, at levels that are most valuable in the attainment process.

Arabs are a subordinate ethnic group in Israel. Until recent decades, the majority of Arabs were illiterate. Since the 1950s, school attendance rates have increased dramatically. In recent cohorts, nearly 90 percent of Arab-Israeli males have completed primary education, over 50 percent have completed secondary education, and nearly 20 percent were attending post-secondary education. These levels have been achieved despite the small per capita share of resources allocated to the Arab educational system, the less privileged social background of most Arab students, and the linguistic handicaps they suffer in the Hebrew universities. The proportion attending post-secondary education is now somewhat higher for Arabs than for Oriental Jews (Nahon 1987; Shavit 1989), a pattern that has emerged despite massive efforts to advance the education of Oriental Jews. This study aims to identify the structural factors which enable an underprivileged minority to 'jump queue' in the educational attainment process.

ARAB AND JEWISH MINORITIES IN ISRAEL

Israel is a multi-ethnic society consisting of Jewish ethnic groups from different countries (e.g., Moroccans, Russians) and three major Arab religious groups (Moslems, Christians and Druse). Approximately 83 percent of the Israeli population is Jewish and the remainder is Arab. The Jewish population is divided about equally between Orientals (those of Asian or African origin, primarily from Morocco, Iraq and Yemen) and Ashkenazim (originating in Europe, primarily from Russia, Poland, Rumania and Germany). About 75 percent of the Arab population are Suni Moslems, about 15 percent are Christians of various denominations, and about 10 percent are Druse (Central Bureau of Statistics 1985).

Jews are clearly the dominant group in Israel. The political system is aimed at the realization of Jewish national interests and aspirations, and is much more responsive to claims made by Jews than by Arabs. Jews enjoy a greater relative and absolute share of the resources allocated by the state (Al-Haj and

Rosenfeld, forthcoming), and enjoy more favorable occupational and educational opportunities (Zureik 1979).

Within the Jewish population there are important socioeconomic and class differences between the Ashkenazim and Orientals. The former are more privileged, are overrepresented in positions of political power and in the professions, and their income is higher than that of the other groups. Oriental Jews are less educated on the average than Ashkenazim and are typically concentrated in lower white-collar and skilled blue-collar occupations (Smootha 1978).

The Arabs

In 1947, the year before Israel attained political independence, in the area that was to become Israel, the Arab population numbered about 650,000. Of these, about half a million, including many of the better educated, urban, and well-off Arabs, crossed the borders into Lebanon, Syria, Trans-Jordan and Egypt during the war of 1948 (Kayman 1984). The literacy rate was very low in the population that remained.

The Moslems and Druse in Israel are reaching the end of an important transition from a primarily agricultural to a proletarian society. Before World War I, an overwhelming majority of Moslems and Druse lived in small villages and engaged in small-scale agriculture. Since World War I, there has been a gradual proletarianization of this population that has accelerated since the mid-1960s (Carmi and Rosenfeld 1974). Urbanization was not part of this process, and most Arabs still live in separate villages or small towns and attend Arab-language schools.

Christians are the more "modern" of the Arab groups — they are more urban, more highly educated, and their fertility rate is lower (Matras 1985). About half of Christian Arab students attend church-affiliated schools. These schools have a reputation for higher standards of instruction than the public schools.

The Oriental Jews

Until the late 1940s, the Jewish community of Palestine (later Israel) consisted primarily of European Jews. However, about half the immigrants who arrived later came from the Middle East and North Africa. These Oriental Jews differed from Jews of European origin in several important respects: their families were

larger, their educational levels lower, and they lacked technical skills. Since the mass immigrations, there has been a strong correlation between ethnic origin and various dimensions of social stratification within the Jewish community (Smootha 1978; Smootha and Kraus 1985).

Initially, it was believed that ethnic inequalities were temporary and would disappear as the newcomers from Asia and North Africa assimilated the norms and educational patterns of the host society (Ben-David 1952; Eisenstadt 1967). However, recent research has demonstrated that in the thirty years since the mass immigration, ethnic gaps in occupational distributions and in income have not been reduced and in some instances have even increased (Bernstein and Antonovsky 1981; Nahon 1984, 1987). During the 1950s, many Asian-African immigrants were settled in new so-called "development towns" and villages. Although some of these communities contained a mix of immigrants, others were ethnically quite homogeneous. The disproportionate concentration of Oriental Jews in predominantly Oriental and often peripheral communities account for some of their socio-economic disadvantage relative to Ashkenazim (Spilerman and Habib 1976).

Arab and Oriental Education

Soon after the Oriental immigration began it became apparent that the average scholastic aptitude of Oriental pupils was lower than that of Ashkenazi pupils by a full standard deviation (Ortar 1967). Since then, the social advancement of Oriental Jews, especially their educational attainment, has been the subject of great concern in the political system. Ethnic integration of schools and enrichment and Head Start programs are examples of measures taken to raise the educational level of Oriental Jews (Peleg and Adler 1977). Various measures were aimed at increasing their rates of high school completion. During the 1950s and 1960s, when large proportions of Oriental children were dropping out at the primary level, the Ministry of Education issued a regulation that Orientals could pass the eighth grade National Standardized Seker Examinations at a lower threshold than was applied to Ashkenazim. Later, junior high schools were introduced in the hope that a 6+3+3-year system would ease the transition from primary to secondary education and reduce the drop-out rate of the old 8+4-year sys-

tem. During the 1960s and 1970s, vocational tracks at the secondary level were expanded in order to provide low-aptitude students (which was almost synonymous with "those of Oriental origin") with alternatives to the demanding academic college preparatory tracks. These programs resulted in a sharp increase in the rates of reaching and completing secondary education and in recent cohorts almost 85 percent of Oriental Jews complete some form of post-primary education. The efforts to enhance attendance of Orientals at the post-primary level has not been translated into gains in higher education. Most Oriental secondary school students attend tracks that do not prepare them for the national matriculation examinations that are necessary for admission into most forms of higher education. Thus, despite the increase in the rate of post-primary education, the proportion entering higher education has remained stable at about 15 percent as compared with about 40 percent for the Ashkenazim.

Arab education, on the other hand, lacked any such massive efforts for the advancement of its students. There is very little tracking in the Arab system—over 80 percent of Arab secondary school students follow as academic track and over 50 percent sit for the matriculation examinations. Among Oriental secondary school students, only 25 percent are enrolled in academic tracks and fewer than 20 percent sit for the matriculation examinations.

Large gaps exist between the facilities and personnel available to the Jewish and the Arab educational systems. In the Jewish elementary schools, the pupil/teacher ratio is about 27:1 while in Arab elementary schools it is 35:1. The mean number of pupils per classroom in Jewish elementary schools is 25.8. In Arab elementary schools it is 31.1. The student/teacher ratios in Arab and Jewish secondary schools are 18:1 and 11:1 respectively (Central Bureau of Statistics 1986, p. 13). Until the late 1970s, inequalities between the two systems also extended to the qualifications of teachers. During the 1974-75 school year, over half of teachers in Arab primary schools were not certified to teach as compared with about 15 percent of teachers in Jewish schools.¹

In view of their caste-like position in the Israeli social structure and their poorly financed

¹ This situation has changed radically during the late 1970s and 1980s when increasing numbers of

school system, it is not surprising that the educational attainment of Arabs in Israel is low in comparison with that of Jews. The median years of school completed by Arab and Jewish men born in the late 1950s is 9.6 and 12.9 respectively (Central Bureau of Statistics 1987, pp. 572-3). (Although increasing rapidly, the school attendance rates of Arab women are still low at all levels.)

Why do Oriental Jews fail to attain rates of higher education enrollment commensurate with their more privileged position in the Israeli social system? Conversely, how do Arabs, especially Moslems², manage to attain post-secondary education at rates exceeding those expected on the basis of their socioeconomic characteristics and structural position in Israeli society?

THE COMPETITION HYPOTHESIS

A recurring theme in the literature on ethnic relations is that ethnic minorities may derive some benefits from residential segregation or social isolation from the dominant social groups. For example, Wilson and Portes (1980) show how minorities benefit economically from an enclave economy which shields them from exploitation by super-ordinate groups. Similarly, Hout (1986) argues that residential segregation of blacks in the U.S. and Catholics in Northern Ireland has enabled these groups to develop middle class niches within otherwise disadvantaged labor markets. In the sphere of education, segregation and integration of ethnic groups and races exert conflicting influences. On the one hand, minority students who are schooled in segregated settings seem to develop a more favorable self-image and higher aspirations than those who must compete with more privileged students in integrated schools (Rosenberg and Simmons 1972). On the other hand, integration of minority students with

students of privileged social origins seems to enhance their cognitive achievement (Dreeben and Gamoran 1986).

In a comprehensive attempt to understand ethnic and racial differences in educational attainment, Ogbu (1983) distinguishes three types of minorities: Autonomous, Immigrant, and Caste. Autonomous and Immigrant minorities enjoy a cultural autonomy which shelters them from discrimination, and enables them to avoid direct contact with and internalization of their negative stereotype held by members of the dominant groups. In short, they benefit from their cultural, if not geographic, isolation from the dominant groups, and their children tend to succeed in school. These groups often maintain separate educational systems and their members need not compete with the dominant groups in the educational process. A familiar example is the role that parochial education has played in furthering the educational attainment of Catholic ethnic groups in the United States (Greeley and Rossi 1966).

In contrast to these ideal-type minorities who typically do well in school, Caste minorities exhibit persistent failure in school and are heavily concentrated at the bottom of the occupational and economic hierarchies. Caste minorities have usually been incorporated into the host society involuntarily, through slave trade or conquest for example. They are subjected to discrimination and are dependent on the wider, national economy for their livelihood. Caste minorities have no way out of their situation because discrimination blocks upward mobility and return immigration is not possible. Since occupational mobility is blocked to them, school success is not valued and they lack the motivation to invest in school work.

Israeli Arabs exhibit some characteristics of Caste minorities: they have been incorporated into Israeli society involuntarily, they are subjected to discrimination, and are highly dependent on the Jewish majority for their livelihood (Lustick 1980). At the same time, their residential segregation may enable them to avoid direct competition with Jews, especially in the sphere of education. Semyonov and Tyree (1981) compare the socioeconomic attainment of Arabs Oriental Jews. When place of residence and socioeconomic background are controlled, Arabs obtain more schooling and more prestigious occupations than Oriental Jews, and they suggest this is due to the fact that Orientals must compete with Ashkenazim in the same

Arabs graduated from universities. Many of these graduates could not find employment in the Jewish-owned economy and turned to teaching. Consequently, the average educational attainment of Arab primary school teachers is now higher than that of Jewish school teachers.

² The high educational attainment of Christian Arabs is not surprising because they have enjoyed the benefit of parochial school systems and a tradition of educational attainment since the previous century.

school system and in the same labor markets. Orientals are bound to lose in the educational competition with Ashkenazim because their average level of scholastic aptitude is much lower. On the other hand, the isolation of Arabs in a separate system shields them from competition with Jews, although Semyonov and Tyree do not test this interpretation.

The competition hypothesis cannot be tested directly because all Arabs attend separate schools. However, it can be tested for Oriental Jews, some of whom live in segregated communities while others are integrated with Ashkenazim. Therefore, I predict that Orientals who are educated in integrated settings (with Ashkenazim) are less likely to enroll in successive school levels than those educated in towns with a large Oriental majority.

THE TRACKING HYPOTHESIS

The Arab secondary educational system is predominantly academic and about 80 percent of Arab high school students are enrolled in this track. It has been argued that the availability of vocational education in the Hebrew system and the disproportionate placement of Orientals in vocational tracks accounts for some of the Oriental/Ashkenazi disparity in educational and occupational attainment (Shavit 1984; Swirsky 1981). I predict that the absence of vocational tracks in the Arab educational system explains the high Arab transition rate from secondary to higher education and that when educational track is statistically controlled, the Arab advantage in these transition probabilities will diminish.

DATA

Two data sets are employed in this study. The first is a life-history study of a representative sample of 2,144 Jewish men born in 1954 who were interviewed in 1980-81 (Matras, Noam, and bar-Haim 1984). The interview consisted of extensive questions on the respondent's educational, occupational, and residential histories and his social background. These data were combined with data from military personnel files that include measures of cognitive ability. Respondents who immigrated to Israel after age 13 and who were therefore educated abroad were excluded from the analysis.

The second data set includes 760 Arab men born in 1954 who were interviewed in 1987.

Table 1. Definition of Variables

Variables	Description
Father's and mother's education	Years of schooling completed by father and mother respectively.
Moslem, Christian	Dummy variables indicating Arab respondent's religion.
Oriental Jews	A dummy variable.
Siblings	Number of respondent's siblings.
Ability	A measure of verbal ability obtained from military screening tests (available for Jews only).
Community composition	A dummy variable indicating that 75 percent or more of the population aged 14-17 in respondent's place of residence at age 16 were Orientals, calculated from the 1972 census file.
Years attended	Years of school attended.
Academic track	A dummy variable indicating that respondent attended secondary education in a university-bound track.
Some secondary, secondary, post-secondary	Dummy variables indicating that respondent attended some secondary education, completed secondary education, or attended some post secondary education, respectively.
Diploma	A dummy variable indicating that the respondent obtained the matriculation diploma.

These data were collected for the specific purpose of achieving close comparability with the Jewish data. However, military data files are not available for the Arab respondents, since most Arabs do not serve in the Israeli military. Druse respondents were excluded from the analysis because there are not enough of them in the data set. The variables employed in the analysis are described in Table 1.

FINDINGS

The means and standard deviation of the variables for each ethnic group are presented in Table 2. The data demonstrate the Ashkenazi advantage over the other groups in background variables and cognitive ability. The mean years of school completed for Moslem parents are

Table 2. Means and Standard Deviations of Variables by Ethnicity

	Jews		Arabs	
	Ashkenazim	Oriental	Moslems	Christians
	Means (S.D.)	Means (S.D.)	Means (S.D.)	Means (S.D.)
Years attended	11.46 (1.74)	10.49 (1.80)	9.68 (3.64)	10.93 (2.67)
Ability	13.55 (4.05)	10.51 (4.50)	— —	— —
Siblings	2.08 (1.77)	5.80 (2.90)	8.90 (3.43)	6.88 (2.99)
Father's education	9.81 (4.38)	5.65 (4.58)	3.16 (2.90)	5.20 (3.31)
Mother's education	9.42 (3.85)	3.54 (4.26)	0.77 (1.93)	3.52 (3.17)
Academic track	0.59	0.29	0.80	0.79
Some secondary	0.87	0.80	0.49	0.75
Secondary	0.63	0.34	0.32	0.44
Diploma	0.37	0.14	0.24	0.35
Post-secondary	0.36	0.14	0.19	0.22
Community composition	0.21	0.34	—	—

Notes: Data on ability not available for Arab groups. Data on academic track limited to respondents with some secondary education. Standard deviations not shown for dummy variables.

the lowest of the four groups and their families are the largest. Average background characteristics of Christian Arabs and Oriental Jews are similar. Of respondents with secondary school experience, the proportion who enrolled in an academic track is highest for the Arab groups, exceeding even that of the Ashkenazim, reflecting the lack of vocational tracks in the Arab school system. Of the Oriental Jews, 34 percent lived (at age 16) in communities in which 75 percent or more of teenagers were also Orientals. Of Ashkenazim, 21 percent lived in predominantly Oriental communities.

Ashkenazim are most likely to reach each of the educational levels. Oriental Jews and Christian Arabs enter secondary schools at about equal proportions but the latter are more likely to complete secondary school, to obtain the diploma, and to enter post-secondary education. By contrast, fewer than half of Moslem men begin secondary school. However, about

one-third of Moslem men completed secondary school, about one-quarter obtained the diploma, and nearly one-fifth had post-secondary education. The proportion of Moslems continuing to post secondary education exceeds that of Oriental Jews despite their lower social origins. Although our data set does not permit a comparison of Arabs and Jews on cognitive ability, the mean psychometric score of Arab university applicants is about a full standard deviation lower than the mean score of Jewish applicants (Alaluf and Sadan 1987), and the mean for Oriental Jews is lower than that of non-Oriental Jews (mostly Ashkenazim) by over half of a standard deviation (Kant and Oren 1988, Tables 1 and 2). This suggests that the mean score for Arabs is lower by about half a standard deviation than the mean score for Oriental Jews.³

The first hypothesis predicts that Oriental Jews educated in integrated communities (with Ashkenazim) are less likely to progress from one school level to the next than Orientals schooled in communities with a large Oriental majority. The hypothesis is supported if the net effects of community composition in models of educational attainment are positive and significant.

Table 3 presents the parameter estimates of logit regressions of the probability of attaining successive educational levels given the attainment of a previous level. The models are estimated for Oriental Jews excluding those living (at age 16) in the three major cities. The rationale for excluding residents of big cities, who comprise 14 percent of the Oriental Jews in the sample, is that in large cities a student's social and school milieu is determined at the neighborhood level and may not be reflected in the

³ Mean psychometric scores for Arabs and Oriental Jews were also computed using the records of 1987 applicants to the University of Haifa. These records include test scores on the university admissions tests, a proxy for the Arab/Jewish distinction and country of origin (for Jews). The mean psychometric score for Arabs, Orientals and Ashkenazim were 441.7, 487.0, and 528.5 respectively, and the standard deviation of the test scores is 100. Thus, Orientals are about as advantaged vis-a-vis Arabs as they are disadvantaged vis-a-vis Ashkenazim. The tests are administered in the language of the candidate's choice and have been shown to over-predict Arab academic success for Arabs, indicating that the tests are not biased against Arabs.

Table 3. Logit Regressions of Selected Educational Transitions for Oriental Jews (Standard Errors in Parentheses)

Independent Variables	Transitions			
	From 8 th to 9 th Grade	From 9 th to 12 th Grade	From 9 th Grade to a Diploma	From 12 th to Post-Secondary
Father's education	-.004 (.033)	0.124** (.031)	0.084* (.041)	0.093* (.038)
Mother's education	0.017 (.041)	-.101** (.032)	-.073* (.040)	-.055 (.039)
Siblings	-.099* (.048)	-.064 (.044)	-.078 (.059)	0.021 (.055)
Ability	0.236** (.031)	0.238** (.032)	0.459** (.058)	0.396** (.051)
Community composition	0.209 (.273)	0.372* (.214)	0.543** (.276)	0.710** (.262)
Constant	-.003	-3.088	-7.491	-7.216

* $p < .10$ ** $p < .05$

city-wide composition.⁴ For smaller communities, the local ethnic composition is a better proxy for the relevant milieu. The models control for parental education and number of siblings. The availability of a measure of cognitive ability is fortunate because this variable mediates and controls for the indirect effects of many unmeasured sources of variation.

For each transition, the effect of community composition is positive and in three of the four educational transitions it is significant. Oriental Jews who lived in segregated communities were more likely, net of the other independent variables, to progress from primary to secondary education and from ninth grade to twelfth grade. Ninth-grade Oriental Jews living in segregated communities were also more likely to obtain the matriculation diploma and to progress from twelfth grade to post-secondary schools.

These results are consistent with the hypothesis and suggest that where Oriental Jews compete among themselves in the educational process, they progress further than where they are exposed to Ashkenazi competition.⁵

⁴ When respondents who lived in big cities were included, the effects of community composition were considerably attenuated.

⁵ Rather than signifying an effect of segregation, the positive effect of community composition may

Table 4 evaluates the role of differential tracking in shaping differences between Arabs and Oriental Jews in educational progression. The models are estimated for Moslems, Christians, and Oriental Jews. Moslems are less likely than Oriental Jews to reach secondary education (columns 1 and 2). This disadvantage persists (although reduced from -1.412 to -.934) when controls are added for parental education and number of siblings. The effect of Christian religion is not significant in either of the two models, indicating that Christian Arabs and Oriental Jews are equally likely to reach ninth grade. Despite their disadvantage in reaching ninth grade, Arabs who do reach ninth grade are far more likely than Oriental Jews to attend in an academic track (columns 3 and 4). This simply reflects the lack of vocational secondary education in Arab schools. The Arab groups are also more likely to make the transition from ninth to twelfth grade (column 5), and their advantage in this regard is accentuated when parental education and family size are controlled (column 6). However, after controlling for track placement in ninth grade (column 7), the effects for the Arab groups are reduced considerably, indicating that most of the Arab advantage over Oriental Jews in the likelihood of reaching twelfth grade is due to their differential track placement.

The role of tracking in shaping ethnic differences in the likelihood of obtaining the matriculation diploma and attending post-secondary school can be evaluated in a similar man-

mediate the effects of other community characteristics that happen to be correlated with it. An ASR reviewer urged me to estimate the effect of community composition on the educational transitions of Ashkenazim. He/she suggested that "If segregation help insulate minorities from competition they can't win, then we should see benefits for [Orientals] and no effect for Ashkenazim. On the other hand, if there are other aspects of the local opportunity structure involved, then these probably would have similar effects for both groups." I must take issue with this comment: Ashkenazim who live in 'small ponds' are faced with less severe competition than those who must compete in 'large ponds' (i.e., in localities where the competitors are mostly well endowed Ashkenazim). Therefore, the effect of community composition on the attainment of Ashkenazim may be positive even if it only signifies a segregation effect. Nevertheless, I estimated its effects on the educational transition models for Ashkenazim. All the effects are slightly positive and none is significant.

Table 4. Logit Regression of Secondary and Post-Secondary Educational Transitions (Standard Errors in Parentheses)

Independent Variables	From None to 9 th Grade			From None to 9 th Grade in Academic Track			From 9 th Grade to 12 th Grade			From 9 th Grade to a Diploma			From 12 th Grade to Post Secondary Education		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
Moslem	-1.412** (.113)	-.934** (.137)	2.281** (.189)	2.674** (.231)	0.939** (.146)	1.220** (.177)	0.477** (.232)	1.524** (.150)	1.836** (.191)	0.862** (.236)	0.614** (.183)	0.742** (.226)	0.335 (.260)		
Christian	0.264 (.233)	-.161 (.251)	2.054** (.297)	2.201** (.317)	0.602** (.234)	0.736** (.251)	0.042 (.307)	1.392** (.237)	1.510** (.255)	0.645** (.312)	0.313 (.305)	0.333 (.319)	-.039 (.355)		
Father's education		0.109** (.019)		0.087** (.022)		0.084** (.019)	0.063** (.021)		0.082** (.021)	0.043 (.025)		0.042 (.025)	0.022 (.027)		
Mother's education		0.024 (.023)		0.008 (.023)		-.016 (.020)	0.033 (.023)		-.003 (.023)	-.008 (.030)		-.013 (.031)	-.008 (.033)		
Siblings		0.067** (.020)		-.034 (.028)		0.030 (.023)	0.002 (.027)		0.050* (.025)	-.011 (.030)		0.000 (.031)	0.014 (.033)		
Academic track							1.587** (.168)			2.477** (.196)			1.118** (.213)		
Constant	1.375	1.156	-.895	-1.293	-.258	-.489	-.726	1.539	1.665	2.575	0.313	0.515	-1.009		

^{**} $p < .05$ ^{***} $p < .01$

ner. Among ninth graders, Moslems and Christians are more likely than Oriental Jews to obtain the diploma (column 8). Controlling for social background (column 9) accentuates these advantages somewhat, but controlling for track reduces them considerably (column 10). A similar pattern emerges for the transition from twelfth grade to post-secondary education: the advantage of Moslem Arabs over Oriental Jews is reduced to insignificance when track is controlled (column 13). The advantage of Christian Arabs, although not significant, is also reduced considerably when track is controlled.

These results indicate that some of the disadvantages for Oriental Jews vis-a-vis the Arab groups in the likelihood of completing secondary school, obtaining the matriculation diploma, and entering post secondary education, are due to the differential availability of academic secondary education to the different groups.

DISCUSSION

In Israel, as elsewhere, (Kraus and Hodge, forthcoming) the effect of primary and secondary schooling on occupational attainment diminished during the 1960s and 1970s. This was accompanied by an increase in the occupational returns to post-secondary education. At the same time, primary and secondary education have become more accessible to all ethnic groups and socioeconomic strata. Reproduction theories of education would lead us to expect that as lower educational levels open up, the "threshold of social exclusion" shifts to higher educational levels. The results of recent Israeli research are consistent with this metaphor when applied to Jewish ethnic groups: the Ashkenazi/Oriental gap in post secondary educational attendance has not diminished (Shavit 1989). Yet rates of post-secondary education among Arabs have increased dramatically and now exceed those of Oriental Jews. The major institutional mechanism accounting for the low rate of post secondary education among Oriental Jews is the curricular differentiation of the Hebrew secondary system and disproportionate allocation of Oriental Jews to non-academic tracks. Why has the Arab secondary educational system not been differentiated into tracks, and why have Arabs, an otherwise disadvantaged minority, been allocated to university-bound tracks?

In Israel, non-academic tracks are usually

vocational and often require expensive laboratories, machinery, and other equipment. It is plausible that the relative lack of vocational tracks into the Arab system reflects the general discriminatory attitude of the government bureaucracy and policy-makers. However, non-academic tracks need not necessarily be vocational. In the United States, for example, a non-academic track often takes the form of a General Track. In Israel, too, there are non-matriculation tracks in which the curriculum is academic or general and does not require elaborate facilities. The fact that such tracks have not been introduced in the Arab school system suggest that cost may not be the only factor.

Two additional explanations are possible. First, vocational education in the Jewish sector was expanded to enable the many Oriental Jews who could not succeed in the academic tracks to attend some form of alternative secondary education. Thus, introduction of vocational tracks enabled the academic tracks to maintain their traditionally high standards while at the same time enabling Oriental Jews to acquire a secondary education. Unlike the Oriental Jews, Arabs did not threaten academic standards in the Jewish schools because they attended a separate system. In addition, there was less official concern with the Arab dropout rate than with that of Oriental Jews. Therefore, introducing tracking to the Arab system would not have resolved a policy-makers' dilemma as it may have done in the Jewish system.

Second, an important latent function of tracking is to shelter members of the dominant ethnic groups from minority competition in the labor market. The non-academic tracks diverted Oriental Jews from competition over academic, professional, semi-professional, and managerial jobs. The persistent occupational inequality between Orientals and Ashkenazim is mediated almost fully by differences in educational credentials (Smootha and Kraus 1985). Direct discrimination against Oriental Jews in the job market is not widespread. On the other hand, Arabs are excluded from labor market competition either directly through overt discrimination or on the basis of the military discharge criterion.⁶

⁶ Most Jewish men serve in the military for about three years. Arabs are exempt from compulsory conscription and only a few enlist, primarily Druse and Bedouins. Many firms require job applicants to show a certificate of discharge from military serv-

Table 5. Occupational Distribution, Percent Employed in the Public Sector, and Percent Unemployed, by Ethnicity: Men with Post-Secondary Education (1984 Labor Survey Data)

Occupation	Total	Arabs		Jews	
		Moslems	Christians	Oriental	Ashkenazim
Scientific & academic workers	29.6	20.3	37.1	19.5	33.0
Other professional & technical workers except teachers	19.6	12.1	11.2	22.4	19.3
Teachers	4.1	30.1	19.1	5.3	2.3
Administrative and managers	15.4	4.7	1.1	13.2	16.5
Clerical and related workers	11.3	14.6	11.2	14.5	10.4
Sales workers	6.1	5.2	6.7	8.0	5.5
Service workers	1.9	3.1	—	3.5	1.4
Agricultural workers	2.4	0.5	2.2	1.9	2.7
Skilled blue-collar workers	9.2	7.8	11.2	11.0	8.6
Unskilled and semi-skilled blue-collar workers	0.5	1.6	—	-0.7	0.4
Employed in public sector ^a	30.0	59.0	50.0	29.0	29.0
Unemployed	2.4	6.5	1.1	3.9	2.0
N	7287	210	96	1495	5120

^a Public sector is defined as categories 3 (Electricity and Water Works) and 8 (Public and Community Services) in the one-digit Israeli classification of industries.

Since university-educated Arabs find it difficult to obtain suitable employment in the Jewish-owned economy, they often turn to public sector employment in the Arab sector, primarily to teaching and to professional jobs in the Arab municipal government. This is consistent with Hout's (1986) assertion that residentially segregated subordinate minorities use the public sector, especially branches that serve their own community, as an avenue of occupational mobility.

Table 5 presents the occupational distribution, the proportion unemployed, and the proportion employed in the public sector for Arab and Jewish men with at least some post-second-

ary education. This is especially common in public sector organizations that have some connection with national security, and in private sector firms which carry out militarily classified contract work. The discharge requirement has become widespread and is now applied to many job openings which are not related directly to matters of national security. It serves as an important legitimator for the exclusion of Arabs from labor market competition against Jews.

Over 30 percent of employed Moslem men and 19 percent of employed Christian men with post-secondary education are employed in teaching, compared to 5.3 and 2.3 percent for Oriental and Ashkenazi men respectively. Fifty percent of educated Christian men and nearly 60 percent of Moslem men with post-secondary education are employed in public sector industries as compared with 29 percent of Jewish men with comparable education. Arabs rarely teach in Hebrew schools and very few educated Arabs obtain employment in local government in the Jewish sector.⁷ Thus, these figures indicate that a large proportion of educated Arabs are employed within the Arab sector away from competition with Jewish workers.

⁷ There are some exceptions to this: most visible is the employment of Arab medical staff in the publicly-owned hospitals and the growing number of Arab pharmacists and other para-medical vocations and professions. Although interesting in their own right, these exceptions constitute a small proportion of the total Arab labor force.

As long as the acquisition of educational credentials by the subordinate minority does not threaten the job opportunities of the dominant group, education for the minority need not be rationed. In such cases, policy-makers — who are presumably sensitive to dominant-group interests — are not under political pressure to invest in tracking or other mechanisms for the exclusion of the minority. Barriers to the educational attainment of minorities are not necessary if more direct means of social exclusion can be employed and if members of the dominant group are shielded from competition with minorities in the job market.

During the 1960s and 1970s, Arab primary and secondary educational systems expanded rapidly in response to larger birth cohorts entering the system. This has created job openings as teachers and administrators for Arab university graduates. In recent years, however, the increase in the number of public sector jobs in the Arab sector has slowed considerably. At the same time, an increase in the number of Arab university graduates has resulted in deterioration in their employment prospects. If this trend continues, it may lead to greater unemployment of educated Arabs and to a possible decline in Arab enrollment in post-secondary education. It may also lead to more aggressive attempts by Arabs to penetrate the Jewish economy and result in resistance among Jews to the high rates of post-secondary education among Arabs. Already there are proposals to block Arabs from entering universities.

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CULTURAL RESOURCES AND SCHOOL SUCCESS: GENDER, ETHNICITY, AND POVERTY GROUPS WITHIN AN URBAN SCHOOL DISTRICT*

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This paper tests a cultural resources/social interaction model of gatekeeping by school teachers using data for seventh- and eighth-grade students in a city school district. Where previous investigations of "cultural capital" have focused on the rewards accruing to highbrow music and arts activities, we examine the informal academic standards by which teachers reward more general skills, habits, and styles. The result is a recursive causal model including the following blocks of variables: (a) student and teacher background characteristics, (b) student basic skills, absenteeism, and teacher judgments of student work habits, disruptiveness, and appearance; (c) coursework mastery; and (d) course grades. This model fits the data quite well, and almost completely accounts for the course-grade differentials observed for gender, ethnicity, and poverty groups. The most important predictor variable is the teacher's judgment of student work habits, followed by cognitive performance on both basic skills and coursework mastery. The results suggest that the standard (Wisconsin) status attainment model be modified to include cultural/social-interactional-based measures of individual and gatekeeper behaviors and perceptions.

Recent papers by Swidler (1986) and Lamont and Lareau (1988) offer a comprehensive discussion of how gatekeepers exclude and recruit individuals to high status positions. At the macro level, gatekeeper preferences and practices define the reward structure. At the micro level, individuals respond to this reward structure with strategies of action determined by their access to differentially valued cultural resources. Gatekeepers recognize and reward a broad list of characteristics, including habits, skills, and styles as well as attitudes, preferences, knowledge, goods, and credentials.

One of the most important arenas for the study of gatekeeping in American society is the secondary school. In this paper, we follow DiMaggio's (1982) example by focusing on the reward structure used by secondary school

teachers in allocating course grades. However, where DiMaggio operationalizes cultural resources as highbrow music and arts activities, we seek to discover the informal academic standards by which teachers reward more general skills, habits, and styles. Our results provide empirical content for Lamont and Lareau's (1988) argument that the cultural resources rewarded by school (and other) stratification systems go far beyond those defined by the elite consumption activities of high culture.

Cultural resources are classified according to whether they represent cognitive or noncognitive performance. By estimating the net contribution of each of these to course grades, we join the cultural resource literature to an older research tradition within the sociology of education. This tradition has long argued that school reward outcomes are based upon teacher judgments of students' noncognitive traits as well as of their cognitive performance.¹ Relevant

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¹ Both "functionalists" and "conflict theorists" agree on the importance of citizenship and work

noncognitive traits include behaviors that are clearly related to cognitive performance, such as homework; behaviors which may be marginally related to cognitive performance, such as disruptiveness; and purely ascriptive characteristics such as gender, ethnicity, and social class background.

Previous studies differ on whether teacher bias is a factor in course-grade assignment. The studies finding teacher bias typically picture a "middle-class hegemony" within the schools such that teachers discriminate against students from low-income and/or minority households (e.g. Sexton 1961; Rosenthal and Jacobson 1968; Rist 1973; Bowles and Gintis 1976). Two causal mechanisms behind teacher bias may be distinguished. The first is a theory of "perceptual bias." Teachers *perceive* lower levels of performance when evaluating poor, African-American, or female students, and give lower grades even when the students' *actual* performance is no different from that of children with more favored characteristics. The second mechanism is a "self-fulfilling prophecy," which involves a feedback loop that affects real student behavior. Here, the teacher's reduced expectations lower students' self-image and effort and lead the teacher to present less-demanding material, resulting in reduced cognitive achievement.

Other studies find no evidence of teacher bias based on class or race. These studies report little success in detecting either teacher expectation effects on student cognitive performance (Dusek 1975; Williams 1976; Entwisle and Hayduk 1982, 1983) or socioeconomic bias in teacher evaluations net of such performance (Rehberg and Rosenthal 1978; Alexander and Eckland 1980; Sewell and Hauser 1980; Natriello and Dornbusch 1983, 1984; Leiter and Brown 1985). The evidence is more fragmentary regarding bias against minority students since studies based on large data sets (Williams 1976; Rehberg and Rosenthal 1978; Alexander and Eckland 1980; Sewell and Hauser 1980) contain too few such students to test for these effects. Small scale studies that are able to perform appropriate tests (Entwisle and Hayduk 1982; Natriello and Dornbusch 1984; Leiter and Brown 1985) have failed to find evidence of racial bias among teachers. Regarding gender,

results are mixed. Some researchers report that, net of aptitude test score, girls receive somewhat higher course grades than boys (Brophy and Good 1974; Rehberg and Rosenthal 1978; Alexander and Eckland 1980) while others do not (Entwisle and Hayduk 1982, Natriello and Dornbusch 1984, Leiter and Brown 1985).

Both groups of studies relate closely to the cultural resources research agenda. The "unbiased teacher" literature implies that group differences in grades should be attributed to family and cultural background characteristics, peer group culture, and/or society-wide (structural) arrangements (such as job ceilings for some groups). The "teacher bias" literature directly implicates teachers in the differential school success of particular social groups — it posits grading on ascribed characteristics. Such a direct form of discrimination should be detectable with a simple statistical test examining course grades by gender, ethnicity, and social class background, net of performance. The failure of some studies to detect teacher bias may be due to the fact that a more subtle form of bias is occurring — the self-fulfilling prophecy with its emphasis on feedback effects. When Lamont and Lareau (1988) count "good citizenship" and "the ability to signal competence" as examples of cultural resources, they recognize the necessity for gatekeepers to be able to *perceive* such signals, and to *feed back* appropriate rewards. That is, both cultural resource and self-fulfilling prophecy views acknowledge the centrality of skills, habits, and styles, but see them as evolving within a dynamic process in which student conduct is shaped by student/teacher interaction.

Two recent studies place different emphases upon such interaction. Natriello and Dornbusch (1983, 1984), analyzing objective data on student behavior, report that teachers have unbiased perceptions of this behavior, and grade their students accordingly. They conclude that previous reports of teacher bias may be invalid because they failed to measure and control behavior variables. Alexander, Entwisle and Thompson (1987) focus on the teacher, arguing that attempts to find a pervasive "middle-class hegemony" have misspecified the effect. Instead, patterns of teacher bias are produced by the interaction between the personal backgrounds of teachers and students. These researchers report that teachers with high-status backgrounds relate poorly to low-status and African-American students, which acts to de-

habits for course grade assignment, net of cognitive performance. For example, see Parsons (1959) and Bowles and Gintis (1976).

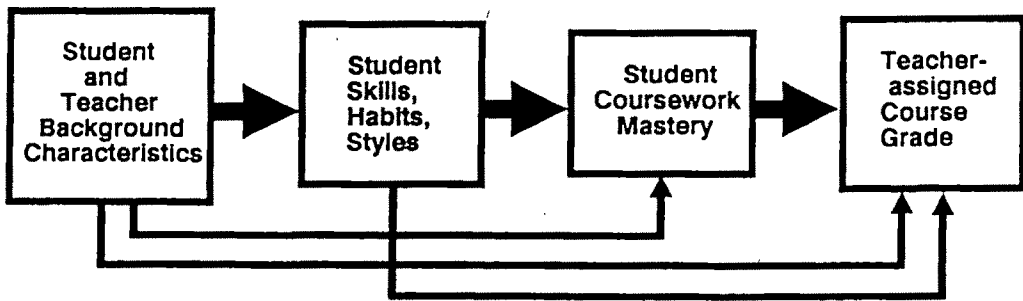


Fig.1. Path Diagram of the Course-Grade Attainment Process

press the aptitude test scores and grades of these students. Of course, both of these attempts to "bring behavior back in" and to "bring the teacher back in" to school achievement studies are potentially consistent with the cultural resources view. They simply provide alternative specifications of the important causal mechanisms.

In sum, cultural resource theory posits a general set of student skills, habits, and styles which figure in student/teacher interaction and are differentially rewarded by teachers; prior studies simply assert the importance of some of these variables, or of ascriptive characteristics. Yet these prior studies suffer from several limitations. First, most employ aptitude test scores to measure cognitive performance, whereas mastery of assigned coursework is the appropriate criterion underlying course grades. Second, the majority of these studies lack measures of student noncognitive attitudes and behavior, and when such measures are available, they are rarely combined with appropriate cognitive performance measures. Finally, these studies have typically searched for a pervasive pattern of middle-class hegemony and teacher bias—few have tested for interactions between student and teacher characteristics in the incidence of bias.

In the present research, we analyze a unique data set (Southwestern City School District Data Set 1988) containing distinct measures of basic academic skills and mastery of assigned coursework, as well as objective and teacher judgment measures of student noncognitive behavior (habits and styles). These data permit estimation of a block-recursive model of the course-grade assignment process, in which student and teacher background characteristics affect student skills, habits, and styles, which in turn affect student coursework mastery and the course grade (Figure 1).

We estimate this model with no preconceptions about the magnitude or extent of teacher bias in course-grade assignment. Indeed, our cultural resource/social interaction model suggests that any such bias operates through a subtle, longitudinal process involving multiple feedbacks between both teacher and student behavior as these are embedded within the culture of the school, home, and neighborhood. Since our data refer to a single school term, and teacher judgments provide the measures of student habits and styles, we are unable to statistically isolate bias occurring via such a process. Yet, estimation of the model in Figure 1 is still of great interest because the teacher assigns the course grade, so that teacher judgments define the reward system whose implicit rules determine stratification outcomes. If teacher judgments of student habits and styles influence course grades net of cognitive performance, and do so in a way that at least partially explains the differential success of gender, poverty, and ethnic groups, then the cultural resource/social interaction model has been strongly supported. Such a result would argue for modifying the Wisconsin Model of status attainment to include the sort of culture-linked measures of behavior and perception used here.

METHODS AND VARIABLES

The data are derived from the records of a central-city urban southwestern school district, supplemented by a questionnaire mailed to teachers. The district is large and racially diverse, with a high representation of youths from low-income families. During the 1986-87 school year, the average daily student enrollment of 128,405 was 20.5 percent Anglo, 49.2 percent African-American, 28.0 percent Hispanic (almost entirely Mexican-American), 0.4 percent American Indian, and 1.9 percent Asian.

Approximately half of these students qualified for free or reduced-cost lunch, indicating "poverty" status. Of the district's 7,315 teachers, 55 percent were Anglo, 37 percent African-American, and 7 percent Hispanic. Almost three-quarters of the teachers had more than six years of experience, with the median being eleven years. Approximately half had earned Masters' degrees.

Although the computerized school system records contain much useful information, they do not contain sufficient information about noncognitive habits and styles to estimate the model in Figure 1. To collect this information, a questionnaire was sent to the teachers of a stratified random subsample of students. The focus was on students enrolled in the seventh- and eighth-grade social studies courses: State History/Geography (seventh grade) and American History/Citizenship (eighth grade). These courses were selected because (a) they are required of all students, minimizing self-selection; (b) they focus on skills and substantive information which are distinct from language and mathematics basic skills, so that course mastery scores for these subjects are conceptually distinct from basic skills test scores; (c) the course mastery tests are longer and therefore more reliable than those for many other subjects; and (d) students in these two courses take the same basic skills tests (the Iowa Tests of Basic Skills [ITBS]).

The sample for each course was stratified by ethnicity. All of the Asian students in each social studies course were studied. The sampling fractions for African-Americans, Anglos, and Hispanics were set so that the sample size for each group would be approximately double the size of the Asian group.²

The final sample has 486 students, enrolled in 22 middle schools and evenly divided between the seventh and eighth grades (Table 1). With the exception of racial composition — the sample stratification variable — the sample means closely resemble values for the total population of seventh- and eighth-grade students. (These means and standard deviations, as well as all other reported statistics, are unweighted.) All regressions include a dummy variable for the eighth-grade course, but its

Table 1. Means and Standard Deviations for Variables in the Combined 7th and 8th Grade Social Studies Sample (N=486) and the Population from Which It Was Drawn

Variable	Sample		Population Mean
	Mean	Standard Deviation	
8th Grade Course	.51	.50	.48
Male	.51	.50	.51
Low-income	.40	.49	.44
Asian	.12	.33	.01
African-American	.33	.47	.53
Hispanic	.27	.44	.25
Female Teacher	.54	.50	.55
Teacher Experience (years)	14.71	7.95	13.66
Afr.-Am. Teacher	.42	.49	.43
Basic Skills	74.58	15.34	74.42
Days Absent	3.08	4.01	3.47
Work Habits	57.42	30.81	NA
Disruptiveness	22.09	30.51	NA
Appearance and Dress	64.24	27.19	NA
Coursework Mastery	36.85	13.45	33.38
Course Grades	78.45	11.04	76.71

coefficient is not reported since it is of no substantive interest.

Student Background Characteristics

Gender, ethnicity and poverty are all dummy variables. Males are coded 1, females 0. Asian, African-American, and Hispanic students are coded separately, with Anglo being the omitted variable. A student is coded 1 on the income measure if he or she qualifies for a free lunch based on the Federally specified poverty line. The district determines eligibility based on information supplied by parents at the beginning of the school year. This measure has two key weaknesses as a proxy for social class: (a) it introduces considerable measurement error into a social class construct that is intrinsically continuous, and (b) white flight has left this central-city school district concentrated at the low end of the social class distribution. Both deficiencies should tend to bias any estimated poverty effects downwards.

² There were two few American Indians for meaningful comparison with the other groups, so this group was excluded.

Table 2. Correlations of Cognitive Variables, Noncognitive Variables, and Course Grades (N = 486)

Variable	Basic Skills	Days Absent	Work Habits	Disruptiveness	Appearance & Dress	Coursework Mastery	Course Grades
Basic Skills	1.00	-0.09	0.43	-0.13	0.25	0.62	0.58
Days Absent		1.00	-0.20	0.03	-0.07	-0.16	-0.32
Work Habits			1.00	-0.26	0.57	0.49	0.77
Disruptiveness				1.00	-0.01	-0.19	-0.31
Appearance & Dress					1.00	0.22	0.37
Coursework Mastery						1.00	0.63
Course Grades							1.00

Teacher Characteristics

The teacher's gender, race (African-American or white) and years of total teaching experience were extracted from teacher files.³

Student Basic Skills

Basic skills are measured by the Iowa Tests of Basic Skills which includes a Language total, with subtests measuring vocabulary, reading comprehension, spelling, capitalization, punctuation, and usage and expression, and a Mathematics total, with subtests measuring concepts, problem solving, and computation. Each test and subtest is measured in grade-equivalent form, so that, for example, 70.00 indicates the beginning seventh-grade level.

For this analysis it is convenient to have a single basic skills measure. Thus, the simple average of the student's Language and Mathematics total scores was employed. Test scores were collected during the middle of the Spring, 1986 term.

Student Habits and Styles

Absenteeism is measured by the number of days the student was absent during the semester. To measure student work habits, styles and demeanor, teachers were asked to rate each of his or her sampled students on a "Student Work-

Ethic Characteristics Questionnaire" administered at the end of the Fall, 1986 term. The first question on the questionnaire was "This student does better on homework than ___ percent of the students that I have taught." This format was used to measure all habits and styles.

Student work habits are measured using teacher judgments on four performance dimensions: homework, class participation, effort, and organization. These were averaged into a single variable, since the pairwise correlations between the variables are between .80 and .95. Style and demeanor are measured by teacher judgments of the student's disruptiveness, and the student's appearance and dress. These have been kept as distinct variables in the analysis, since their correlations with one another and with work habits are modest (Table 2).

Coursework Mastery

Coursework mastery is measured by a curriculum-referenced test (CRT) prepared by the District and administered at the end of the Fall, 1986 term. To insure the content and instructional validity of these tests, panels of teachers selected lists of "essential course elements" for each subject. Test items were then matched to these elements. Where possible, items were selected from existing test-item banks. However, when an appropriate item could not be found, a new item was written. Textbooks and curricular materials were used to judge the appropriateness of the items. The social studies tests used in this paper had reliabilities of approximately .90.

³ Because there are few Hispanic teachers in this data set, they have been combined with Anglos to form the "white" category.

Course Grades

The teacher-assigned course grade is based on a 100-point system, with 49 being the lowest grade assigned. System-wide policy stipulates that individual teachers and/or schools may determine their own system of measuring and rewarding performance. Course grades are for the end of the Fall, 1986 term.

Analysis

Given the model in Figure 1, we begin our analysis by regressing basic academic skills, habits and styles on student and teacher characteristics and their interactions. We next regress coursework mastery on variables prior in the model. Finally, course grades become the dependent variable for our regressions. For both coursework mastery and course grades we proceed in stages, beginning with the exogenous independent variables and then adding endogenous predictors, moving toward the dependent variable. This provides a path-analytic decomposition of inter-group (exogenous) differentials into direct and indirect effects (Alwin and Hauser 1975).

RESULTS

Basic Skills and Noncognitive Variables

Table 3 displays the regression analysis for basic skills (ITBS scores), absenteeism, and teacher judgments of student work habits, disruptiveness, and appearance and dress. For the basic skills regression, gender is insignificant, but both poverty and ethnicity are quite significant (column 1). Low-income students score lower on basic skills than do higher income students, Asians score higher than Anglos, while African-Americans and Hispanics score lower than Anglos. Since 10 points on the ITBS scale correspond to one grade level, these (unstandardized) regression coefficients indicate that the poor are 1/2 grade below the less poor, and Asians are 1/2 grade above Anglos. Hispanics are 1/2 grade below Anglos, and African-Americans are 8/10 grade below Anglos.

Adding gender/ethnicity and poverty/ethnicity interactions to the equation (column 2) shows that neither is statistically significant, and the increment to R^2 is modest. Unlike the other dependent variables in this table, there is no third column adding teacher characteristics to

the equation for basic skills. This is because basic skills are measured by the test score from the prior year, when the student had a different teacher. Further, basic skills are the result of a cumulative process, and are unlikely to be strongly affected by teacher characteristics in one particular subject during one particular term.

The equation for days absent (column 3) shows only one significant effect. Asians average 1.93 fewer days absent than Anglos. Since the overall average days absent for the sample is 3.08 (Table 1), the Asian effect is large in relative terms. When interactions among the student variables are added to the equation (column 4), none are significant.

The regression including interactions between student and teacher ethnicity (column 5) shows a large, negative, and statistically significant African-American teacher/African-American student coefficient, indicating that absenteeism decreases markedly when African-American students have an African-American teacher. This supports the emphasis by Alexander et al. (1987) on teacher as well as student characteristics, and their interaction in the classroom.

When this analysis is repeated for teacher judgments of student work habits, the main effects (column 6) show a large and significant negative effect for males, and an enormous and significant positive effect for Asians. The predicted value of this variable for higher income Anglo females is 60.8 ("This student has better work habits than 60.8 percent of the students I have taught"), and being Asian raises this mean by 25 points.

When interactions among the student characteristics are added to the equation (column 7), none is significant and R^2 increases only slightly. The results of adding teacher characteristics and teacher/student ethnicity interactions to the main effects model are shown in column 8. Among these variables, only the negative effect for African-American teachers is significant. This is combined with large but statistically insignificant positive interactions with each of the minority student statuses. African-American and white teachers agree that Asian students have by far the best work habits. However, statistical significance aside, African-American teachers differ from white teachers in reporting (marginally) better work habits for their African-American and Hispanic than for their Anglo students, whereas white teachers report the opposite pattern.

When these calculations are repeated for

Table 3. Regression Analysis of Basic Skills and Noncognitive Variables

Independent Variable	Basic Skills			Days Absent			Work Habits			Disruptiveness			Appearance & Dress	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Constant	76.08	75.62	3.56	3.97	2.99	60.79	58.88	58.45	14.54	13.94	10.33	66.28	65.68	59.89
Male	-1.00 (0.8)	-0.09 (0.0)	-0.45 (1.2)	-1.23 (1.8)	-0.45 (1.2)	-7.48 (2.8)	-4.71 (0.9)	-7.56 (2.8)	5.94 (2.2)	6.38 (1.3)	5.67 (2.1)	-2.70 (1.1)	-0.62 (0.1)	-2.64 (1.1)
Low-income	-5.13 (3.9)	-6.19 (1.9)	0.01 (0.0)	-0.11 (0.1)	-0.03 (0.0)	-0.60 (0.2)	1.24 (0.2)	-0.07 (0.0)	-6.39 (7.2)	-3.83 (0.5)	-5.05 (1.7)	-6.80 (2.6)	-11.07 (1.7)	-5.70 (2.1)
Asian	5.21 (2.4)	7.67 (2.1)	-1.93 (3.0)	-1.38 (1.3)	-1.54 (1.7)	24.79 (5.2)	21.72 (2.7)	18.98 (2.8)	-11.23 (2.4)	-8.22 (1.0)	-17.75 (2.7)	13.10 (3.0)	9.35 (1.3)	7.70 (1.3)
African-American	-8.11 (5.0)	-9.36 (3.7)	-0.56 (1.2)	-1.62 (2.2)	0.29 (0.5)	-2.60 (0.7)	1.26 (0.2)	-6.22 (1.4)	14.06 (4.0)	15.27 (2.7)	4.53 (1.0)	1.46 (0.4)	4.72 (0.9)	0.27 (0.1)
Hispanic	-4.70 (2.7)	-3.51 (1.2)	0.33 (0.6)	-0.18 (0.2)	0.37 (0.6)	-3.06 (0.8)	-0.88 (0.1)	-6.37 (1.4)	5.35 (1.4)	5.32 (0.9)	3.60 (0.8)	4.07 (1.2)	0.60 (0.1)	3.68 (0.9)
Male Asian		0.55 (0.1)		-0.36 (0.3)			9.41 (1.0)			-5.10 (0.5)			10.64 (1.3)	
Male African-Am.		0.72 (0.2)		1.38 (1.5)			-3.55 (0.5)			0.30 (0.0)			-3.00 (0.5)	
Male Hispanic		-4.30 (1.3)		1.42 (1.5)			-10.19 (0.6)			-0.13 (0.0)			-8.14 (1.2)	
Low-income Asian		-5.61 (1.2)		-0.62 (0.4)			-6.57 (0.6)			-1.96 (0.2)			-2.55 (0.3)	
Low-income African-American		2.82 (0.7)		0.86 (0.8)			-5.64 (0.7)			-4.72 (0.6)			-1.00 (0.1)	
Low-income Hispanic		2.45 (0.6)		-0.26 (0.2)			3.67 (0.4)			-1.70 (0.2)			16.13 (2.0)	
Female Teacher					0.48 (1.2)			5.23 (1.8)			4.39 (1.6)			2.06 (0.8)
Teacher Experience					-0.00 (0.2)			0.25 (1.4)			0.19 (1.1)			0.53 (3.3)
African-American Teacher					1.15 (1.6)			-10.87 (2.0)			-1.59 (0.3)			-5.28 (1.1)
Afr.-Am. Teacher x Asian Student					-1.15 (0.9)			12.11 (1.3)			10.08 (1.1)			8.26 (1.0)
Afr.-Am. Teacher x Afr.-Am. Student					-2.08 (0.3)			9.68 (1.4)			19.36 (2.8)			2.05 (0.3)
Afr.-Am. Teacher x Hispanic Student					-0.31 (0.3)			8.00 (1.1)			2.37 (0.3)			1.39 (0.2)
R ²	.247	.260	.033	.046	.049	.091	.105	.112	.085	.087	.119	.031	.062	.059

Notes: Unstandardized coefficients. All regressions include a dummy variable for the 8th grade course. The absolute value of the t-statistic is in parenthesis.

teacher judgments of student disruptiveness, the main effects (column 9) show males more disruptive than females, the poor less disruptive than the less poor, Asians much less disruptive than Anglos, and African-Americans much more disruptive than Anglos. Adding interactions among the student characteristics to the equation (column 10), none of them is statistically significant and R^2 barely increases. However, the interactions between student and teacher ethnicity (column 11) show an interesting effect: African-American teachers judge African-American students to be more disruptive than do white teachers. This effect is statistically significant and very large, accounting for the preponderance of the positive African-American student disruptiveness coefficient observed among the main effects. The inference to be drawn is not completely clear. African-American students show lower absenteeism and are reported to have better work habits when they have an African-American teacher, suggesting a particularly positive classroom interaction. Yet African-American teachers consider African-American students to be much more disruptive than do white teachers. One possibility is that this higher disruptiveness rating is a natural concomitant of a more intense interaction pattern. A second possibility is that African-American teachers have particularly high aspirations for their African-American students, and thus hold them to a higher standard of conduct than do white teachers. A third possibility is that African-American teachers are disproportionately assigned to classes or schools with the most disruptive African-American students. At this point, two implications are suggested. One supports the emphasis by Alexander et al. (1987) on the effects of individual, socially structured personal background upon teacher/student interaction patterns. The second suggests that the greater disruptiveness reported for African-American students cannot be attributed to prejudice on the part of white teachers.

The final set of regressions repeats these calculations for teacher judgments of student appearance and dress. The main effects show significantly lower scores for low-income compared to higher income students and significantly higher scores for Asians than for Anglos. Adding interactions among the student characteristics shows particularly high scores for low-income Hispanics. The only teacher characteristic that is statistically sig-

nificant is teacher experience — more experienced teachers report that their students have a more pleasing appearance and dress.

Overall, the basic skills and noncognitive variables analyzed in this table are strongly responsive to student characteristics. Males are judged to have worse work habits and to be more disruptive than females. Low-income students have weaker basic skills and are reported to have a less pleasing appearance than higher income students, but they are also reported to be less disruptive. Asians have stronger basic skills and less absenteeism than Anglos, and are reported to have better work habits, less disruptiveness, and a better appearance and dress. Many of these Asian effects — work habits and disruptiveness in particular — are very large. African-Americans have weaker basic skills and are reported to be more disruptive than Anglos. Hispanics have weaker basic skills than Anglos. The extent to which these inter-group differences account for the differential coursework mastery and course grades received by these groups is examined next.

Coursework Mastery

Table 4 reports the regression analysis of coursework mastery, measured by the CRT score. When this variable is regressed against student characteristics (column 1), males score higher than females, the poor score lower than the less poor, Asians score higher than Anglos, and African-Americans and Hispanics score lower than Anglos. Only the male, Asian, and African-American effects are significant and substantial. Examining interactions among student characteristics (column 2) adds little to these findings; none of them is significant and R^2 barely increases.

Adding teacher characteristics to the regression (column 3), does not significantly alter the pattern of student effects, and the student/teacher interactions are not significant. However, both female teachers and more experienced teachers are associated with higher coursework mastery among their students. The latter finding corroborates previous results, which single out teacher experience as one of the few readily measured teacher variables that positively affects learning (Hanushek 1986). However, this finding lacks robustness, since it disappears when the specification is changed to permit interactions among student characteristics and main effects of teacher characteris-

Table 4. Regression Analysis of Coursework Mastery

Independent Variable	Gross-Effect Coefficients				Net-Effect Coefficients			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	33.27	32.61	29.63	29.00	2.84	2.66	1.22	1.17
Male	2.90 (2.7)	4.74 (2.4)	3.04 (2.9)	5.04 (2.5)	4.21 (4.8)	5.34 (3.3)	4.26 (4.9)	5.47 (3.4)
Low-income	-2.00 (1.7)	-4.03 (1.4)	-1.71 (1.5)	-3.26 (1.2)	-0.58 (0.6)	-2.67 (1.2)	-0.48 (0.5)	-2.28 (1.0)
Asian	10.34 (5.5)	14.11 (4.4)	11.28 (4.2)	13.99 (4.4)	5.21 (3.4)	8.53 (3.3)	6.47 (3.0)	8.54 (3.3)
African-American	-5.41 (3.8)	-4.78 (2.2)	-5.04 (2.8)	-4.59 (2.1)	-2.15 (1.8)	-1.66 (0.9)	-1.63 (1.1)	-1.56 (0.9)
Hispanic	-1.72 (1.1)	-2.20 (0.9)	-1.30 (0.7)	-2.32 (1.0)	0.56 (0.4)	-0.83 (0.4)	0.78 (0.5)	-0.99 (0.5)
Male Asian		-4.70 (1.3)		-4.95 (1.3)		-5.93 (2.0)		-6.00 (2.0)
Male African-American		-1.51 (0.5)		-1.93 (0.7)		-1.16 (0.5)		-1.40 (0.6)
Male Hispanic		-2.71 (0.9)		-2.99 (1.0)		0.04 (0.0)		-0.20 (0.1)
Low-income Asian		-1.25 (0.3)		-2.24 (0.5)		1.31 (0.4)		0.58 (0.2)
Low-income African-American		1.73 (0.5)		1.19 (0.4)		1.60 (0.6)		1.27 (0.5)
Low-income Hispanic		4.71 (1.4)		4.42 (1.3)		3.95 (1.4)		3.89 (1.4)
Female Teacher			2.63 (2.3)	2.75 (2.5)			2.00 (2.2)	2.08 (2.3)
Teacher Experience			0.18 (2.6)	-1.39 (1.2)			0.11 (1.9)	0.11 (1.9)
African-American Teacher			-0.17 (0.1)	-1.39 (1.2)			0.50 (0.3)	-0.70 (0.8)
African-American Teacher x Asian Student			-3.07 (0.8)				-3.21 (1.1)	
African-American Teacher x African-Am. Student			-1.38 (0.5)				-1.72 (0.8)	
African-American Teacher x Hispanic Student			-1.88 (0.6)				-1.26 (0.5)	
Basic Skills					0.33 (9.4)	0.33 (9.3)	0.33 (9.1)	0.33 (9.2)
Days Absent					-0.14 (1.3)	-0.14 (1.3)	-0.16 (1.5)	-0.16 (1.5)
Work Habits					0.14 (7.0)	0.14 (7.2)	0.14 (6.9)	0.14 (6.9)
Disruptiveness					-0.02 (1.1)	-0.02 (1.1)	-0.02 (1.1)	-0.02 (1.3)
Appearance & Dress					-0.04 (2.0)	-0.04 (2.0)	-0.04 (2.1)	-0.04 (2.2)
R ²	.257	.265	.282	.289	.527	.534	.538	.544

Notes: Unstandardized coefficients. All regressions include a dummy variable for the 8th grade course. The absolute value of the t-statistic is in parentheses.

tics (column 4). The main effects of student characteristics *are* robust to the alternative specifications of the first four columns.

Columns 5-8 add the basic skills and noncognitive variables to the equations. This shows the effects of these variables in their own right, as well as the direct effects of student characteristics, net of basic skills and noncognitive traits. The indirect effects of student characteristics, operating through the effects of these variables on basic skills and noncognitive variables are measured by the difference between the gross-effects coefficients for the characteristics reported in columns 1-4 and the net-effects coefficients reported in columns 5-8 (Alwin and Hauser 1975).

The effects of basic skills and noncognitive variables on coursework mastery are essentially identical across specifications (columns 5-8). Effects are large and significant, with R^2 increasing from about .27 to about .53. The bulk of this increase is attributable to the effects of basic skills (the ITBS score) and teacher judgments of student work habits — both variables positively affect coursework mastery. Since coursework mastery and basic skills are measured objectively and independently of teacher judgments of student work habits, the significant net effect of the work habits variable provides some support for the validity of the teacher judgments.

As expected, both days absent and teacher judgments of student disruptiveness are negatively related to coursework mastery, but these effects are not statistically significant. The appearance and dress variable is significant and negatively related to coursework mastery, but its magnitude is small. This effect appears to reflect a trade-off between student attention to appearance and dress and to schoolwork. Or, possibly, good students “dress down” in revolt against “middle-class values.”

When the basic skills and noncognitive variables are controlled, the male effect increases in magnitude and significance. Thus, males show significantly better coursework mastery than females, an effect which becomes stronger when their basic skills, absenteeism, work habits, disruptiveness, and appearance and dress are controlled. In other words, rather than these variables explaining the male/female differential in coursework mastery, males score higher on coursework mastery despite teacher judgments regarding their inferior work habits and greater disruptiveness, as noted in Table 3.

On the other hand, controls for basic skills and noncognitive variables reduce the negative differentials for poor, African-American, and Hispanic students, and the positive differentials for Asian students. In particular, approximately half of the 10-point Asian/Anglo differential in coursework mastery is explained by the basic skills and noncognitive variables differentials between these groups. Significantly more than half of the five-point African-American/Anglo differential in coursework mastery is explained by basic skills and noncognitive variables. These results demonstrate that, for *individual* students, learning of assigned coursework is responsive to skills, habits, and styles, which may be partially summarized by the extent to which the individual's “strategy” involves a positive orientation toward schooling. Further, differential *group* learning is demonstrated to be partially explicable on the basis of group differentials in basic skills and noncognitive variables (Swidler 1986; Ogbu 1986). The remainder of this paper examines the extent to which these variables, in combination with coursework mastery, determine the course grades assigned by teachers.

Course Grades

Table 5 presents regressions in which student characteristics, teacher characteristics, interactions among these, basic skills and noncognitive variables, and coursework mastery are sequentially added to the equation to predict course grades. Moving across the columns, R^2 increases from .13 to .77, indicating that these variables are quite successful in accounting for individual variation in course-grade attainment.

Looking at gross differentials for gender, poverty, and ethnicity groups (column 1), the strongest effect is for Asians, who score almost 10 points higher than Anglos. Statistically significant but more modest negative effects are observed for males and African-Americans. Effects for low-income and Hispanic students are not significant.

When teacher variables and teacher/student ethnicity interactions are added to the equation (column 2), the student characteristics differentials are unchanged, and the teacher/student ethnicity interactions are not significant. There is thus no evidence that white teachers discriminate against minority students when assigning course grades.

When basic skills and noncognitive variables

Table 5. Regression Analysis of Course Grades: Additive Models for the Effects of Cognitive and Noncognitive Variables

Independent Variable	(1)	(2)	(3)	(4)
Constant	80.53	80.27	54.21	53.95
Male	-2.29 (2.4)	-2.15 (2.3)	-0.43 (0.8)	-1.35 (2.6)
Low-income	-0.75 (0.7)	-0.64 (0.6)	0.12 (0.2)	0.23 (0.4)
Asian	9.90 (6.0)	9.96 (4.2)	3.47 (2.6)	2.07 (1.6)
African-American	-2.84 (2.3)	-2.91 (1.8)	0.45 (0.5)	0.81 (0.9)
Hispanic	-1.82 (1.3)	-1.01 (0.6)	1.45 (1.6)	1.29 (1.5)
Female Teacher		-0.93 (0.9)	-1.77 (3.1)	-2.21 (4.1)
Teacher Experience		0.12 (1.9)	0.04 (1.1)	0.01 (0.4)
African-American Teacher		-2.40 (1.3)	-0.28 (0.3)	-0.39 (0.4)
Afr.-Am. Teacher x Asian Student		0.30 (0.1)	-1.44 (0.8)	-0.75 (0.4)
Afr.-Am. Teacher x African-Am. Student		0.44 (0.2)	-1.33 (0.9)	-0.96 (0.7)
Afr.-Am. Teacher x Hisp. Student		-1.47 (0.6)	-2.05 (1.4)	-1.78 (1.3)
Basic Skills			0.23 (10.6)	0.16 (7.3)
Days Absent			-0.44 (6.5)	-0.41 (6.3)
Work Habits			0.22 (17.9)	0.19 (15.7)
Disruptiveness			-0.03 (2.9)	-0.02 (2.7)
Appearance & Dress			-0.04 (2.9)	-0.03 (2.3)
Coursework Mastery				0.22 (8.0)
R ²	.131	.150	.737	.769

Notes: Unstandardized coefficients. All regressions include a dummy variable for the 8th grade course. The absolute value of the t-statistic is in parentheses.

are added to the equation (column 3), R² increases from .15 to .74. All effects are statistically significant and in the expected direction. As measured by their t-statistics, the most important are the positive effects of work habits and basic skills, followed by the negative effect of absenteeism. These results provide powerful evidence for the importance of basic skills, student behavior, and teacher judgments of student habits and styles as predictors of school success.⁴ In addition, with these variables in the equation, most student characteristic variables are reduced to insignificance. The only exception is the positive effect for Asians, and it is reduced by approximately two-thirds, from 9.9 points to 3.5 points.

Of course, skills, habits and styles likely affect course grades via their impact on the student's coursework mastery. However, adding coursework mastery to the equation (column 4), produces only a modest increase in R². While coursework mastery exerts a strong, positive, significant effect on course grades, the basic skills, work habits and styles variables remain significant. Thus, although the magnitudes and significance of these variables are somewhat diminished, they are still relatively large, significant, and in the expected directions, indicating that these variables operate only partially via their effect on coursework mastery, but show persistent net effects in their own right. Apparently teachers grade directly on these traits, over and above their relation with coursework mastery.

In this specification of the equation, income, African-American, and Hispanic effects remain insignificant, indicating that the differential course grades received by these groups are explained by their differential performance on the intermediate variables. The Asian effect is further reduced, and is no longer significant, indicating that this group's higher course grades can also be explained by their performance on the intermediate variables. A notable exception to these trends is that a significant negative male effect reappears. This was to be expected, since males showed both higher coursework mastery and lower course grades than females. However, the effect is quite modest, being only

⁴ In calculations not shown, Language Basic Skills have only a slightly stronger effect than Mathematics Basic Skills. This justifies the procedure of combining these scores into a single basic skills summary measure.

1.35 grade points. Nevertheless, this significant net effect for males is consistent with previous research reporting that, particularly in the seventh and eighth grades, teachers find boys difficult to deal with, and grade them down accordingly.

Calculations were repeated with the set of student-characteristic interactions in the equation (available from authors). These interactions are not significant, affirming the robustness of the findings already reported.⁵

Finally, following Alexander et al. (1987), we test whether the skills, habits, styles, and coursework mastery effects on course grades differ according to the student's background characteristics, and/or the interaction between these and the teacher's background characteristics. Tests for interactions with student characteristics are shown in Table 6; those for higher-order interactions, including both student and teacher characteristics, are available upon request. Since simultaneously adding many interactions leads to multicollinearity problems, equations are presented in which interactions with skills, habits, styles, and coursework mastery are added one at a time. The results are reported in successive columns. In each case, the dependent variable is the student's course grade.

Looking at interactions of student characteristics with basic skills (bottom panel of column 1), we find that only one is significant: Hispanics receive a much higher course-grade return to basic skills performance than do Anglos. Since this effect is positive, and the others are not significant, these results provide no evidence of teacher bias in course-grade assignment. Similar results are observed for absenteeism (column 2) and perceived work habits (column 3). None of these interactions is significant, indicating no evidence of teacher bias.

For disruptiveness, there is only one significant effect: boys are penalized for being dis-

ruptive, whereas girls are not. With these interactions in the equation, the main effect of perceived disruptiveness falls to zero. Thus, the disruptiveness effect observed in Table 5 is shown to be entirely concentrated among males. This, of course, is consistent with previous findings that teachers are particularly disturbed by the behavior of twelve- and thirteen-year old boys. Although this effect is significant, it is relatively small in magnitude.

There are no significant interactions for appearance and dress. For coursework mastery there is a single significant interaction: Hispanic students receive greater returns to coursework mastery than do Anglo students. For cognitive performance, either basic skills (column 1) or coursework mastery, Hispanics receive greater rewards than do any other group. The reasons for this are not known.

In the hope of better understanding these effects, re-estimates were made including higher-order interactions among student and teacher ethnicity and the variables in Table 6 (not shown). The equations with basic skills and coursework mastery interactions show essentially no change from Table 6 — the large, positive interactions between these variables and Hispanic students occur whether the teacher is African-American or white. None of the higher-order teacher/student interactions with absenteeism, work habits, disruptiveness, or appearance and dress is significant.

SUMMARY AND DISCUSSION

The cultural resources/social interaction model of school achievement has been strongly supported. Student work habits, as reported by teachers, determine coursework mastery and, net of such mastery, student grades. This argues for modifying the standard (Wisconsin) status attainment model to explicitly include such measures of behavior and the perceptions of behavior by gatekeepers. It also argues for future attempts to deepen our understanding of the micro-processes underlying stratification outcomes by providing data on the way gatekeeper judgments are constructed from a myriad of day-to-day interactions. [For additional discussion see Cicourel and Mehan (1985) and Mehan (1989).]

The relative magnitudes of the effects of student basic skills, habits, and styles upon coursework mastery, and of these variables plus coursework mastery, upon course grades, are

⁵ The fact that individual schools are free to work out their own bases for grading suggests that a school effect may be operating that is related to ethnic composition. To test for this, the percentages of students who were African-American, Hispanic, and Asian in each of the 22 schools under study were computed. These contextual variables were then added to the regressions in Table 5. All three minority contextual variables exerted positive, statistically significant effects on course grades, but these were modest in size and do not alter the findings in this table. These calculations are available upon request.

Table 6. Regression Analysis of Course Grades: Interactive Models for the Effects of Cognitive and Noncognitive Variables

Independent Variable	Interactions with:						
	Basic Skills	Days Absent	Work Habits	Disruptiveness	Appearance & Dress	Coursework Mastery	No Interaction
Constant	55.29	52.48	52.96	52.13	52.91	53.97	52.80
Male	0.71 (0.3)	-1.20 (1.8)	-1.63 (1.5)	-0.67 (1.0)	-2.95 (2.2)	-0.49 (0.3)	-1.42 (2.7)
Low-income	-2.49 (0.9)	0.15 (0.2)	-0.45 (0.4)	0.26 (0.4)	-1.09 (0.8)	-1.48 (0.9)	0.32 (0.6)
Asian	1.13 (0.2)	1.63 (1.4)	-1.27 (0.4)	1.45 (1.4)	2.40 (0.9)	2.93 (0.9)	1.43 (1.6)
African-American	-3.11 (0.9)	0.75 (0.8)	1.24 (0.9)	0.50 (0.6)	3.09 (1.8)	-0.79 (0.4)	0.35 (0.5)
Hispanic	-8.00 (2.0)	0.73 (0.8)	0.48 (0.3)	0.76 (0.8)	1.97 (1.1)	-4.78 (2.1)	0.30 (0.4)
Basic Skills	0.14 (3.9)	0.17 (7.5)	0.17 (7.4)	0.17 (7.6)	0.17 (7.1)	0.18 (8.0)	0.17 (7.6)
Days Absent	-0.42 (6.6)	-0.34 (2.2)	-0.43 (6.6)	-0.42 (6.5)	-0.43 (6.6)	-0.42 (6.4)	-0.43 (6.6)
Work Habits	0.18 (14.8)	0.18 (14.9)	0.18 (8.8)	0.18 (15.0)	0.19 (15.1)	0.18 (14.9)	0.18 (15.2)
Disruptiveness	-0.03 (3.4)	-0.03 (3.2)	-0.03 (3.2)	-0.00 (0.2)	-0.03 (3.1)	-0.03 (3.4)	-0.03 (3.3)
Appearance & Dress	-0.02 (1.8)	-0.02 (1.9)	-0.02 (1.9)	-0.02 (1.9)	-0.02 (0.9)	-0.02 (2.0)	-0.02 (2.0)
Coursework Mastery	0.21 (7.9)	0.21 (7.7)	0.21 (7.7)	0.21 (7.7)	0.21 (7.7)	0.16 (3.8)	0.21 (7.7)
Interactions between _____ (see column heading) and student characteristics:							
_____ x Male	-0.03 (0.8)	-0.06 (0.5)	0.00 (0.2)	-0.03 (2.1)	0.02 (1.2)	-0.03 (0.7)	
_____ x Low-income	0.04 (1.0)	0.06 (0.5)	0.01 (0.8)	0.01 (0.3)	0.02 (1.1)	0.05 (1.2)	
_____ x Asian	0.01 (0.1)	-0.02 (0.1)	0.03 (0.8)	0.01 (0.2)	-0.02 (0.5)	-0.02 (0.3)	
_____ x African-Am.	0.04 (1.0)	-0.13 (0.7)	-0.02 (0.7)	-0.01 (0.4)	-0.04 (1.8)	0.03 (0.6)	
_____ x Hispanic	0.11 (2.1)	-0.12 (0.7)	-0.00 (0.1)	-0.02 (0.9)	-0.03 (1.0)	0.14 (2.4)	
R ²	.763	.759	.759	.761	.761	.765	.758

Notes: Unstandardized coefficients. All regressions include a dummy variable for the 8th grade course. The absolute value of the t-statistic is in parenthesis.

summarized by the standardized regression coefficients (beta weights) shown in Table 7. Basic skills and student work habits are the principal determinants of coursework mastery. However, even with coursework mastery controlled, each of the remaining variables significantly affects course grades. The work habits variable exerts by far the largest effect — the standardized coefficient is approximately twice the magnitude of that for coursework mastery, its closest competitor. The effect for basic skills, the other cognitive performance indicator, is similar to coursework mastery, followed by absenteeism, with disruptiveness and appearance and dress having the smallest effects. *Most striking is the powerful effect of student work habits upon course grades. This confirms the notion that, as alleged by both functionalists and revisionists, teacher judgments of student noncognitive characteristics are powerful determinants of course grades, even when student cognitive performance is controlled.* Both noncognitive and cognitive characteristics determine school success, and effects for cognitive characteristics are approximately equally divided between coursework mastery and basic skills. That is, although coursework mastery is a significant determinant of schooling achievement, teachers grade on much more than coursework mastery alone.

The differential course-grade attainment of gender, ethnicity, and poverty groups are almost entirely accounted for by the cognitive and noncognitive performance variables, the only exception being the small but statistically significant deficit suffered by males. Overall, Asian course grades were ten points (a full letter grade) higher than those for Anglos. Yet after controls for cognitive and noncognitive variables, this differential declines 80 percent to a statistically insignificant two points. Although Asian students outscore non-Asians on basic skills and coursework mastery, and this cognitive performance contributes significantly to their higher course grades, their noncognitive performance as reflected in teacher judgments of their work habits contributes an even greater amount to the school success of this group.

These results provide a corrective to prior discussions which have emphasized the threat of student disruptiveness as the key noncognitive variable in teachers' reward systems. Thus, although Asians are viewed as less disruptive than Anglos, this variable explains little of the

substantial Asian/Anglo course-grade differential. Instead, Asians achieve higher course grades than Anglos by outperforming them on basic skills, coursework mastery, and most important, work habits, measured by the teacher's perceptions of the student's homework, class participation, effort, and organization.

Thus, both functionalists and revisionists are correct to believe that teachers reward "citizenship" over and above cognitive (test score) performance. But to be rewarded, this citizenship must move beyond an absence of threat and into the realm of performance indicated by school attendance and by work habits. When this occurs, a double reward is generated. First, coursework mastery increases and is rewarded. Second, net of this effect, school attendance and work habits are rewarded as performance variables in their own right.

The chain of effects operating through basic skills test scores has a similar double payoff reward structure. That is, good basic skills performance generates a course-grade reward both in and of itself, and for the increase it produces in the student's coursework mastery test score. Thus, any individual or group possessing strong basic skill performance as well as a reputation for good citizenship can achieve unusually high course grades. In our data, Asian students have done just this.

Table 7. Standardized Regression Coefficients (Beta Weights) for Predicting Coursework Mastery and Course Grades

Independent Variable	Dependent Variable	
	Coursework Mastery	Course Grades
Basic Skills	.38**	.22**
Days Absent	-.04	-.15**
Work Habits	.32**	.53**
Disruptiveness	-.05	.05**
Appearance and Dress	-.08*	-.07*
Coursework Mastery	---	.27**

* $p \leq .05$ ** $p \leq .01$

Notes: Values for coursework mastery are calculated from the unstandardized coefficients in Table 4, column 5 and the standard deviations in Table 1. Values for course grades are calculated from the unstandardized coefficients in Table 5, column 4 and the standard deviations in Table 1.

The differentials observed for other groups are more modest. The perceived poor work habits and greater disruptiveness of males lower their course grades below those received by females, but the effect is small. African-American students show only modestly lower course grades than Anglos, an effect almost entirely attributable to their lower basic skills and coursework mastery test scores. Thus, although these students are perceived (by African-American teachers) to be more disruptive than Anglos, this has almost no effect on their course grades. The course grades of low-income students and of Hispanic students are not significantly different from those of Anglos.

How generalizable are these results? Probably no more and no less so than the many other studies which have focused on a single school district at one point in time (e.g., Heyns 1978). In calculations not shown, we estimated a semi-reduced form path model in which the student's gender, ethnicity, and poverty status determines coursework mastery, and these variables together determine course grades, separately for each of 40 subjects in the seventh through twelfth grade curriculum. The impressions gained above, that large course-grade differentials are observed only for Asians, and that these differentials are only partially due to coursework mastery, is strongly supported across this array of courses. Thus, grading practices for the social studies courses focused on in this paper appear to be typical of those in the school system as a whole.

What are the wider implications of these results? Certainly they suggest the importance of "bringing behavior back in" and "bringing the teacher back in" to educational stratification studies. After controlling coursework mastery, both basic skills and work habits are rewarded in and of themselves. These variables are also the best predictors of coursework mastery. That is, teachers are not misguided in their treatment of these variables as proxies for coursework mastery, although they assign these variables extra weight when they use them to allocate course grades with coursework mastery held constant.

More generally, it may be that throughout the stratification system, basic skills and good citizenship are rewarded when they are reflected in real output, related but subsidiary to the task at hand. This practice makes sense in a world in which information and trust are imperfect, so that the transmission and reception of sig-

nals becomes paramount. Gatekeepers define the stratification system through the rewards they offer in response to the signals represented by the skills, habits, and styles of individuals and groups (Swidler 1986; Lamont and Lareau 1988). Rewards are provided — signals are sent, received, and the feedback loop is closed — via social interaction shaped by the biographies, structural positions, and cultural backgrounds of the individuals and groups involved (Alexander et al. 1987). The entire process is a negotiated one in which gatekeepers are trusted to perform their signal-processing tasks within a framework of "procedural norms, structural constraints, and insurance-like arrangements" (Shapiro 1987).

Empirical study of this signal-processing represents an important research agenda for the sociological study of culture and stratification. Researchers have sometimes refrained from examining behavioral and perceived-behavioral differences among population subgroups for fear that their work will be misused to support popular prejudices. The valid points made by structuralist sociologists in response to the "culture of poverty" literature provides one example of this attitude. Yet a new viewpoint is emerging. In this perspective, the behavioral norms of teachers and other gatekeepers, in interaction with those of their subjects, should be studied while acknowledging the interrelatedness of structure and culture. (For this approach to the culture of poverty discussion, see Gans 1968; Swidler 1986; Ogbu 1986; and Wilson 1987.) Can we study the academic success of Asians while seeing more than a "model minority"? Can we talk about "gender cultures" in a non-sexist way? Can we wish to see higher basic skills test scores among African-American students without "blaming the victim?" We must.

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ETHNICITY, GEOGRAPHY, AND OCCUPATIONAL ACHIEVEMENT OF HISPANIC MEN IN THE UNITED STATES*

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Using data from the Survey of Income and Education of the U.S. Census Bureau, I examine occupational inequality between Hispanic and non-Hispanic white men in the U.S. Following previous research, I hypothesize that Hispanic occupational disadvantage is affected by the geographic distribution of Hispanics, and the subgroup structure of the Hispanic population. However, results indicate that neither variable has a strong effect. Instead, the results support a pattern of "conditional occupational assimilation": If Hispanic men speak English at least "very well" and have completed at least 12 years of school, then their occupational achievement is close to that of white non-Hispanic men with similar English fluency and schooling. Otherwise, the occupations of Hispanics are inferior to those of white non-Hispanic men with similar linguistic and educational characteristics. I also reconsider the concept of ethnicity effects on occupational inequality.

Sociological interest in U.S. Hispanics has burgeoned, and much has been written about this rapidly-growing ethnic group (Massey 1981; Borjas and Tienda 1985; Portes and Truelove 1987). Although Hispanics are disproportionately concentrated in low socioeconomic status occupations, occupational differences between Hispanic and non-Hispanic men have not been studied in detail (Tienda 1983a,b; Neidert and Farley 1985).¹ Thus, my first concern in this paper is to examine those differences and investigate the connection between them and Hispanic-non-Hispanic differences in schooling, English language fluency and other work-related characteristics of individuals.

My second concern is the hypothesis that the peculiar geographic distribution of American Hispanics substantially affects Hispanic-non-Hispanic occupational inequality. Prior research claims considerable effect of Hispanics' geo-

graphic location on their employment outcomes (Sanders and Nee 1987), and a long line of research relates occupational inequality to the distribution of minorities across geographic areas (Fossett and Swicegood 1982; Stolzenberg and D'Amico 1977). But the validity of these arguments has been hotly debated, and it remains unclear whether Hispanic-non-Hispanic occupational differences are generally and substantially affected by the unique geographic distribution of Hispanics.

My final concern is the occupational impact of the ethnic substructure of American Hispanics. Recent studies (Bean and Tienda 1987) stress the significance of differences among Hispanic ancestry groups, suggesting that if ethnicity per se affects employment of Hispanics, those effects should also be evident for Hispanic subgroups.

BACKGROUND AND HYPOTHESES

This section considers the likely effects of several factors on occupational differences between Hispanics and non-Hispanics: geographic location, membership in various Hispanic ethnic subgroups, English language fluency, foreign birth, years of schooling, and length of labor market experience.

Geographic differences between American Hispanics and non-Hispanics are stark: in 1980, 31 percent of the U.S. Hispanic population lived in California, compared to nine percent of the non-Hispanic population. About half of all

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¹ Occupational achievement of women was also considered in this research but is reported in a separate paper due to space limitations.

Hispanics were concentrated in California and Texas, compared to 14 percent of the non-Hispanic population. Finally, four-fifths of all Hispanics resided in seven states compared to 35 percent of non-Hispanics (U.S. Bureau of the Census 1982, Table 1).

Past research offers three reasons to hypothesize that these geographic differences affect occupational differences. First, different places have different occupational distributions, leading to different patterns of occupational opportunities for their residents (Mueller 1975; Beck, Horan, and Tolbert 1980; Hodson and Kaufman 1982; Kalleberg and Berg 1987). Second, places differ in the percent of their population that is Hispanic. This difference may affect prejudice and the severity of occupational discrimination (Frisbie and Neidert 1977; Stolzenberg and D'Amico 1977; Fossett and Swicegood 1982). Third, in some places the Hispanic population is large enough to form a separate Hispanic labor market and other institutions that may reduce Hispanic economic disadvantage (Portes and Bach 1980; but see Sanders and Nee 1987; Hirschman and Wong 1984).

The ethnic substructure of the American Hispanic population may also influence the occupational achievement of American Hispanics. The U.S. Census defines five Hispanic ethnic subgroups as immigrants and descendants of immigrants from (1) Mexico, (2) Cuba, (3) Puerto Rico, (4) Central and South America, and (5) all other places. These groups differ in their migration histories, percentages born in the U.S., percentages who usually speak Spanish, average years of schooling, labor force participation rates, median earnings and labor market experiences in the U.S. (Newman 1978; Chiswick 1979; Jaffe, Cullen, and Boswell 1980; Borjas and Tienda 1985). After adjustment for schooling and labor market experience levels, these subgroups still differ in average earnings (see e.g., Tienda 1983b; Reimers 1985; Abowd and Killingsworth 1985), suggesting direct ethnic subgroup effects on employment outcomes. Such effects might be the product of values, attitudes, social networks, or other phenomena associated with an ethnic group. Alternatively, members of one group might be subject to more employment discrimination than members of another group. Certainly no necessary connection exists between ethnic subgroups and their differences in occupational achievement (Tienda 1983a, pp. 270-1, and Bean and Tienda 1987, Ch. 1). Analyses that

Table 1. Independent Variables and Subsamples for Regression Specifications in Two-Way Covariance Analysis Design in which Race-Ethnicity and Geographic Location are Covariates

Sample	White Hispanics Only		Non-Hispanic Whites (3)
	Models Without Hispanic Ethnicity Subgroup Dummy Variables (1)	Models With Hispanic Ethnicity Subgroup Dummy Variables (2)	
<i>State-Specific Analyses</i>			
1. New York	b	b,H	b
2. New Jersey			
3. Florida			
4. Texas			
5. Colorado			
6. New Mexico			
7. Arizona			
8. Nevada			
9. California			
<i>Analysis of Nine State Subsamples Pooled</i>			
10. Analyses including eight state dummy variables	b,S	b,H,S	b,S
11. Analyses without state dummy variables	b	b,H	b

Notes: b indicates basic model variables: ED, ED², EX, EX², SPKENG, and FOBOR; H indicates four dummy variables for Hispanic ethnic subgroups: Mexican, Puerto Rican, Cuban, Central and South American; S indicates eight dummy variables for state of residence: NY, NJ, TX, CO, NM, AZ, NV, and CA.

have found subgroup effects on earnings have generally lacked stringent controls for geographic location. Because Hispanic subgroups are concentrated in different parts of the country (National Commission on Employment Policy 1982; Russell 1983), the correlation between geographic location and Hispanic subgroup is very high (Stolzenberg 1982, Table 1), making it difficult to distinguish ethnicity effects from geographic effects.²

² In 1980, 80.0 percent of Hispanics in California were Mexican-origin, compared to 2.3 percent in New York; Puerto Ricans were 59.4 percent of New York Hispanics and 2.0 percent of California Hispanics; Cubans were 54.8 percent of Florida Hispanics and 1.3 percent of California Hispanics (computed

Much research points to unequal English language fluency as a source of employment inequality between American Hispanics and non-Hispanics (Carliner 1981; McLaughlin 1983; McManus, Gould, and Welch 1983; Reimers 1985; Tainer 1988). Workers who cannot speak English, on average, are less valuable to employers than those who speak English fluently.

Foreign birth apparently delays socialization into American labor market practices, attracts xenophobic discrimination, restricts informal job information networks, and creates mismatches between previously learned job skills and job skills called for by U.S. employers (Chiswick 1978, 1979). Thus, it is important to control for effects of foreign birth on occupational attainment (Neidert and Farley 1985, and Borjas and Tienda 1987). The prevalence of foreign birth varies widely among Hispanic subgroups. In 1976, 69 percent of white Mexican-ancestry men aged 18 to 64 years were born in the U.S. compared to 27 percent of Puerto Ricans, three percent of Cubans and six percent of men of Central or South American ancestry (Borjas and Tienda 1985, p. 3).

On average, American Hispanics have substantially less schooling than non-Hispanic Americans, and substantial schooling differences among Hispanic subgroups (Borjas and Tienda 1985) could influence occupational inequality. Thus, two key questions are: Are occupational effects of Hispanic subgroup membership and geographic location merely consequences of ethnic and geographic variation in workers' schooling? Does schooling affect the occupational achievement of Hispanics more or less than the occupational achievement of non-Hispanics who live in the same geographic areas?

This paper tests two hypotheses: (1) Hispanic-non-Hispanic occupational inequality is substantially explained or affected by Hispanic-non-Hispanic differences in place of residence, Hispanic subgroup membership, and/or individual characteristics such as schooling and English language fluency. (2) Occupational differences among different Hispanic subgroups are substantially explained or affected by differ-

ences in place of residence, ethnic subgroup membership and/or individual characteristics such as schooling and English language fluency. Testing these hypotheses is complicated by the strong association between Hispanic subgroup membership, place of residence, and individual worker characteristics.

DATA

Data are drawn from the Survey of Income and Education (SIE), which was fielded in 1976 by the U.S. Bureau of the Census (1978), with a national response rate of 95.4 percent for approximately 160,000 sampled households. The SIE provides detailed information on English language ability, Hispanic ethnicity, Hispanic subgroup membership, country of birth, years of schooling, and other social, economic, and demographic factors. Large numbers of Hispanic respondents were obtained by oversampling low-income persons. Separate samples were drawn in each state, thereby enhancing coverage of states with large Hispanic concentrations. The present analysis is restricted to those nine states in which the SIE collected data on at least 200 Hispanics in the experienced civilian labor force (ECLF): New York, New Jersey, Florida, Texas, Colorado, New Mexico, Arizona, Nevada, and California. In 1980, these states included 81 percent of the Hispanic population of the U.S. (U.S. Bureau of the Census 1982). The final sample contains 2,272 Hispanic and 17,087 non-Hispanic white men. Weighting of sample cases to reflect sampling probabilities prevents states with disproportionately large samples of Hispanics (e.g., Nevada) from having a disproportionate influence on outcomes of analyses in which data from all nine states are pooled. The absence of adequately-sized samples from some states with substantial Hispanic populations (e.g., Illinois) restricts generalizability somewhat. However, these nine states included 88 percent of all U.S. Cubans, 85 percent of U.S. Mexicans, and 72 percent of mainland Puerto Ricans (U.S. Bureau of the Census 1982).

Specific variables used in the analysis are as follows:

Education (ED) is the number of years of school completed by the respondent. To allow non-linear effects, ED^2 is also included.

Potential years of labor market experience (EX) is years of age minus years of school minus six. To allow non-linear effects, EX^2 is also included.

from U.S. Bureau of the Census, 1982, Table 3). Tienda (1983b, p. 66) argues that the earnings of Puerto Rican mainlanders are adversely affected by the characteristics of the geographic areas in which they are concentrated in the U.S.

Foreign birth (FORBOR) is a dummy variable set equal to one if the individual was born outside the U.S., and zero otherwise.

English language fluency (SPKENG) is measured on the following scale: (1) speaks no English; (2) speaks English "not well — just a few words"; (3) speaks English "not well — more than a few words"; (4) speaks English "well"; (5) speaks English "very well"; and (6) native speaker of English who was raised in a home where English was the usual language spoken.³

Hispanic subgroup in the SIE is classified into five categories: Cuban, Mexican, Puerto Rican, Central or South American, and Other Spanish.

Race is classified into three categories: white, black, and other. There are too few non-white Hispanic men in the SIE to permit their separate analysis. Model selection is based in part on analyses of covariance of SIE respondents of all races, but specific findings reported in this paper are restricted to Hispanic and non-Hispanic white males.

Occupation. Three separate measures of occupation are used: (a) Duncan's socioeconomic index (SEI) is the basic dependent variable. (b) To measure differences in occupational pay rates, each respondent's occupation is indexed by the natural logarithm of mean earnings reported by men in the occupation who worked 50 to 52 weeks per year in the 1970 Census. (c) To measure occupational differences in opportunities for steady employment, each occupation is indexed by the propor-

tion of male incumbents who were employed 50 to 52 weeks in the 1970 Census, the Census immediately preceding the SIE.

ANALYTIC STRATEGY

The analytic strategy used here is two-way analysis of covariance (ANCOVA) (Johnston 1972), which is applied separately for each of the three dependent variables. First, a basic model of occupational attainment is specified, following the discussion above, as shown in equation (1), where OCC is the predicted value of one of the three measures of occupation.

$$\text{OCC} = b_0 + b_1\text{ED} + b_2\text{ED}^2 + b_3\text{EX} + b_4\text{EX}^2 + b_5\text{FORBOR} + b_6\text{SPKENG} \quad (1)$$

Second, ANCOVA is used to test for and estimate group differences in basic model coefficients and intercepts. Finally, coefficient and intercept estimates are used to adjust the mean of OCC in each group for group differences in means of independent variables. If coefficients differ across groups, then adjusted means are calculated by regression standardization: standard values for basic model variables are selected and substituted into equation 1.⁴

Because present concerns focus on both geography and race-ethnicity, analyses presented

³ A similar scale, which measures ability to understand rather than speak English was investigated. However, these scales are nearly perfect substitutes for each other, producing virtually identical results in preliminary analyses, and correlating 0.97 with each other among Hispanics in the SIE data used in this paper. Nonlinearities were investigated without success with polynomial regression. In addition, five different dichotomizations of these scales were tried, but analyses like those reported below suggested that dichotomization of the English ability variables merely reduced their explanatory power in models of occupational achievement. Finally, another variable, called USLENG, was set to one if the individual's usual language was English, and zero otherwise. All analyses reported in this paper were also performed using USLENG rather than SPKENG as the measure of English language ability. Like the dichotomized versions of SPKENG, USLENG was found to have smaller effect on occupational achievement than SPKENG, but replacing SPKENG with USLENG had only trivial effects on the relationship between other variables and occupational achievement. When both SPKENG and USLENG were included in models of occupational achievement, the effect of USLENG

vanished. Finally, I also included the product of schooling and SPKENG in such models to test the hypothesis that the effect of schooling on occupation varies with a person's ability to speak English. That is, since school-learned skills generally involve cognition and communication, I hypothesized that ability to communicate in English would be necessary for full utilization of these skills on the job in a predominantly English-speaking society. However, preliminary analyses found that the product of these variables had no effect whatsoever on occupational achievement, and so that product was not used in analyses reported here.

⁴ If coefficients do not differ across groups, group differences in OCC net of the effects of independent variables are equal to group differences in regression constant terms. If coefficients are found to differ across groups, then group differences in the mean of the dependent variable cannot, except under unusual circumstances (e.g. means of independent variables are identical in all groups), be decomposed into portions due to group differences in means of independent variables and portions due to differences in coefficients. This problem is circumvented by use of a standard set of values for independent variables.

below are part of a two-way analysis of covariance in which geographic location and race-ethnicity are factors, and ED, ED², EX, EX², FORBOR and SPKENG are covariates. This design is shown in Table 1. Analyses in Table 1 involve estimation of the basic model separately for Hispanics and non-Hispanics. Analyses corresponding to rows 1 through 9 involve estimation of the basic model separately for residents of each of the nine states considered here.⁵ Although analyses reported here are based on a full ANCOVA design and its tests, discussion is limited to results based on only the three columns of Table 1.

Depending on assumptions and outcomes of significance tests, geographic and ethnicity effects are distinguished by: (1) estimating the model once for Hispanics and again for non-Hispanics in each state (18 different state- and race-ethnicity-specific analyses), or (2) adding ethnicity dummy variables to analyses of all workers in each state (nine different state-specific analyses), (3) some combination of dummy variables and separate analyses, or (4) adding only dummy variables for state and ethnicity.

Due to small sample sizes within states, basic model parameters cannot be estimated reliably for different Hispanic ethnicity subgroups (e.g. Cuban-Americans) in each separate state (this would involve estimates of 7 basic model parameters for each of the 45 groups defined by five ethnic subgroups in nine states). Accordingly, Hispanic ethnicity subgroup effects on occupation are estimated by including dummy variables for those subgroups in each state-specific equation. This limitation notwithstanding, this analysis permits those subgroup effects to differ in each state. Thus, the design is the equivalent of a single equation having all the interaction terms discussed in the previous paragraph, plus four dummy variables for Hispanic ethnicity subgroup, and 32 additional state-ethnic subgroup interaction terms.

⁵To discern Hispanic-non-Hispanic differences, a dummy variable for Hispanic ethnicity is added to analyses performed on Hispanic and non-Hispanic workers pooled together, or, depending on assumptions or the outcome of statistical tests, the basic model is estimated separately for Hispanics and non-Hispanics. To discern geographic effects, dummy variables representing the nine states examined here are added to analyses of data from all nine states pooled together, or the model is estimated separately for residents of each of the 9 different states.

Table 2. Covariance Analysis Tests for the Socioeconomic Index

Population and Null Hypothesis	F-Statistic (d.f.)
<i>I. Non-Hispanic Whites</i>	
1. Ho: Intercepts do not vary across states (Pooled data from all 9 states)	3.9499** (8, 17072)
2. Ho: Coefficients of basic model variables do not differ across States	1.8774*** (40, 17033)
<i>II. Hispanic Whites: Models without Hispanic ethnicity subgroup dummy variables</i>	
1. Ho: Intercepts do not vary across states (Pooled data from all 9 states)	7.6300*** (8, 2257)
2. Ho: Coefficients of basic model variables do not differ across States	1.4486* (40, 2218)
<i>III. Hispanic Whites: Models with Hispanic ethnicity subgroup dummy variables</i>	
1. Ho: Intercepts do not vary across states (Pooled data from all 9 states)	5.8177*** (8, 2253)
2. Ho: Coefficients of basic model variables and ethnicity dummy variables do not differ across States	1.1267 (72, 2182)

* $p < .05$ *** $p < .001$

FINDINGS FOR THE SOCIOECONOMIC INDEX (SEI)

As hypothesized, Panel I of Table 2 shows statistically significant geographic variation in occupational effects of individual characteristics ($p < .001$; for test details, see Johnston 1972, p. 198; R^2 statistics and N 's for all analyses are reported in Stolzenberg, 1982). Panel II shows geographic variation in effects of Hispanics' individual characteristics. Panel III shows significant interstate differences in intercepts ($p < .001$), but not coefficients when ethnicity subgroup dummy variables are included.

Row 1 of Table 3 shows that the mean unadjusted SEI of Hispanic white men in the nine states is 28.62, compared to 43.34 for non-Hispanic white males who live in the same states. Row 4 indicates the mean Hispanic SEI that would obtain if the numbers of Hispanic men in each state were made equal to the number of non-Hispanic men there, but Hispanic and non-Hispanic means of SEI were unchanged in each state. Comparing rows 1 and 4, equalization of white Hispanic and non-Hispanic population distributions raises the mean SEI of Hispanics from 28.62 to 29.21 SEI points — an insignificant amount, albeit consistent with the hypothe-

Table 3. Raw and Adjusted Mean SEI Values for Hispanic and Non-Hispanic White Males in 9 States

Measure	Hispanic (1)	Non- Hispanic (2)	Differ- ence (1) - (2)
<i>I. State-specific results for Hispanics weighted by Hispanic N's and state-specific results for non-Hispanics weighted by non-Hispanic N's</i>			
Unadjusted mean SEI	28.62	43.34	-14.72
Adjusted mean SEI			
"Hypothetical immigrant"	11.03	14.39	-3.36
"Hypothetical native"	31.49	33.22	-1.73
<i>II. State-specific results for Hispanics and non-Hispanics weighted by non-Hispanic N's</i>			
Unadjusted mean SEI	29.21	43.34	-14.13
Adjusted mean SEI:			
"Hypothetical immigrant"	11.56	14.39	-2.83
"Hypothetical native"	33.02	33.22	-0.20

sis that Hispanic-non-Hispanic differences are exacerbated by group differences in geographic distribution.

To permit interstate and Hispanic-non-Hispanic differences in the effects of basic model variables on SEI, standardizations in rows 2, 3, 5, and 6 are performed separately for Hispanics and non-Hispanics in each state. Results of state-specific standardizations are weighted by the number of respondents in each state, then averaged. In the top half of Table 3, Hispanic N's are used to weight state-specific results for Hispanics and non-Hispanic N's are used to weight results for non-Hispanics, reflecting Hispanic-non-Hispanic differences in population distribution across states. In the lower half of Table 3, non-Hispanic N's are used to weight state-specific results for both non-Hispanics and Hispanics, to remove the effect of Hispanic-non-Hispanic differences in population distribution across states.

Standardizations are based on two different hypothetical individuals, which I call the "hypothetical native" and the "hypothetical immigrant." The "hypothetical immigrant" has completed eight years of school, has 10 years of potential labor force experience, was not born in the U.S., and speaks only a few words of English (scores two on the fluency scale). The

"hypothetical native" has completed 12 years of school, has 10 years of potential labor force experience, was born in the U.S., and speaks English "very well" but was not raised in a household where English was spoken (scores five on the fluency scale).

For the hypothetical immigrant in row 2, equalizing the characteristics of Hispanic and non-Hispanic workers at levels of the hypothetical immigrant greatly reduces the SEI gap between Hispanic and non-Hispanic men, albeit at very low SEI levels. For the hypothetical native in row 3, Hispanic and non-Hispanic SEI levels are much higher, and the difference between them is reduced further.

Results in the lower panel of Table 3 also control for Hispanic-non-Hispanic differences in population distribution among states, but are similar to those in the upper panel. Equalizing the characteristics of Hispanic and non-Hispanic workers at levels of the hypothetical immigrant greatly reduces the SEI gap between Hispanic and non-Hispanic men. Equalizing characteristics at the level of the hypothetical native virtually eliminates the remaining gap.

To test for Hispanic ethnic subgroup effects, four dummy variables representing Mexican Americans, Puerto Ricans, Cuban Americans, and Americans of Central and South American ancestry are added to analyses of Hispanics. The dummy for "other Spanish" ethnicity is excluded to avoid multicollinearity. Because tests reported above do not show significant interstate differences in basic model coefficients for Hispanics, these four dummies (and eight dummies representing the nine different states) are added to analyses of data from all nine states pooled together. Hispanic subgroup dummies are significant at the .005 level ($F_{4,2253} = 4.6542$).

In Table 4, coefficients indicate effects relative to the excluded category, "other Spanish." The Cuban coefficient is largest (about five SEI points), and is the only ethnic subgroup effect that is significant at even a five percent level. These results suggest that, after adjusting for effects of basic model variables and geographic location, Cubans have slightly higher SEI than other American Hispanics.⁶

⁶Results are essentially unchanged by exclusion of dummy variables representing states. The test for significance of the four Hispanic ethnicity dummies is significant at the .001 level ($F_{4,2261} = 8.2371$); the dummy for Cuban ethnicity is 5.23, and it is the only Hispanic ethnicity subgroup dummy which is signifi-

Table 4. Coefficients of Hispanic Ethnicity Subgroup Dummy Variables

Ethnic Subgroup	Coefficient (t-statistic)
Mexican	-2.74 (-1.95)
Puerto Rican	1.35 (0.73)
Cuban	4.83** (2.32)
Central and South American	-2.99 (-1.59)

** $p < .025$, two-tailed

Notes: "Other Spanish" dummy variable are excluded from regression to avoid perfect multicollinearity. These results are from regression of SEI on basic model variables, eight state dummy variables, and four ethnicity dummies; estimated on white Hispanics only.

Table 5 presents effects of basic model variables for Hispanics and non-Hispanics. Results are averages based on regressions fitted separately for Hispanics and non-Hispanics in each state.

Because the basic model permits nonlinear schooling and labor force experience effects, the impacts of those variables are evaluated by partial derivatives at specific values of education and experience (Stolzenberg 1979). School effects are evaluated at the sixth and twelfth grades. At the sixth grade, the effect of an additional year of school completed is very modest: 0.90 SEI points for Hispanics and 1.54 for non-Hispanic whites. However, by the twelfth grade, the impact of an additional year of school becomes substantial: 4.23 SEI points for Hispanics, and 4.60 points for non-Hispanics.

Experience effects in Table 5 are evaluated at 10 years of labor force experience. An additional year of experience produces about one-half an additional SEI point for Hispanic whites, and about three-fourths of a point for non-Hispanic whites, suggesting that Hispanics very slowly fall further behind comparable non-Hispanics as their careers progress.

cant at the .05 level ($t = 2.96$). In similar analyses performed separately in each state, no coefficients for Hispanic ethnic subgroups are significant at the .05 level, and no tests for the significance of all four coefficients reject the null hypothesis at the .05 level.

Table 5. Unstandardized Marginal Effects of Basic Model Variables for Hispanic and Non-Hispanic White Males

Independent Variable	Hispanic	Non-Hispanic
Education (evaluated at 6 yrs)	0.90	1.54
Education (evaluated at 12 yrs)	4.23	4.60
Experience (evaluated at 10 yrs)	0.55	0.73
English fluency	2.57	1.36
Foreign birth	-0.26	-0.42

Note: Cell entries are mean of effects in 9 state-specific analyses for Hispanics and for non-Hispanics.

For Hispanics, the difference between not speaking any English and being a native speaker raised in a home where English was the usual language spoken (a difference of five points on the fluency scale) corresponds to a difference of about 12 SEI points, other things represented by basic model variables equal. For non-Hispanic whites, the difference is about seven SEI points.⁷ Thus, the occupational cost of poor English language fluency is great for Hispanics, and considerably greater than for non-Hispanics.

Net of other basic model variables, foreign birth affects occupational SEI of Hispanics and non-Hispanics by less than a single SEI point. Thus, occupational effects of foreign birth appear to be mediated through schooling, English language fluency, or other basic model variables. This result is unexpected and inconsistent with findings of previous analyses of Hispanics' earnings.

WEEKS WORKED AND MEAN EARNINGS

The left panel of Table 6 reports analyses of the pay rates of occupations. Results are similar to those concerning SEI shown in Table 3. In row 1 of column 3, the unadjusted means for Hispanics and non-Hispanics differ by -0.229 , indicating, on average, that the occupations of Hispanic white men pay about 80 percent as much as the

⁷ Because significance tests indicated interstate differences in basic model coefficients for non-Hispanics, this estimate is obtained by multiplying the average within-state coefficient of SPKENG for non-Hispanics (1.36) by 5.

Table 6. Raw and Adjusted Mean Occupational Earnings and Occupational Stability for Hispanic and Non-Hispanic White Males in 9 States

Mean	Mean Occupational Earnings (ln)			Occupational % Work 50-52 Weeks		
	Non-Hispanic (1)	Hispanic (2)	Non-Difference (3)	Hispanic (4)	Hispanic (5)	Difference (6)
Unadjusted mean	8.918	9.147	-0.229	62.1	70.2	-8.1
Adjusted means:						
"Hypothetical immigrant"	8.604	8.734	-0.130	53.3	56.9	-3.6
"Hypothetical native"	8.939	9.009	-0.070	64.4	67.1	-2.7

Note: State-specific results for Hispanics weighted by Hispanic N's, and state-specific results for non-Hispanics weighted by non-Hispanic N's

occupations of non-Hispanic white men.⁸

Row 2 of column 3 shows that equalizing Hispanic and non-Hispanic white men's characteristics at levels of the "hypothetical immigrant" substantially reduces the gap between earnings levels of Hispanics' and non-Hispanics' occupations. Hispanic occupational earnings levels are 88 percent of non-Hispanic white occupational earnings ($e^{-.130} = 0.88$). Row 3 of column 3 shows that equalizing Hispanic and non-Hispanic white men's characteristics at levels of the hypothetical native bring earnings levels of Hispanic men's occupations to 93 percent of the occupational earnings levels of white non-Hispanics ($e^{-.070} = 0.93$).

The right panel of Table 6 reports analyses of weeks worked. Results in row 1 of column 6 show that the unadjusted mean is 8.1 percentage points lower for Hispanics than for non-Hispanic whites. In row 2 of column 6, equalizing Hispanic and non-Hispanic men's characteristics at levels of the hypothetical immigrant reduces the gap between full-year employment levels of Hispanics' and non-Hispanics' occupations to 3.6 points. Row 3 of column 6 shows that limiting comparisons to men with characteristics of the hypothetical native reduces the Hispanic-non-Hispanic difference in OCC-weeks to 2.7 percent.

Table 7 shows marginal effects of basic model variables on occupational earnings and full year

⁸ $\text{Exp}(-0.229) = 0.80$. By the laws of logarithms, the ratio of two numbers is equal to the exponentiated difference between their logarithms. Thus, the ratio of white Hispanic mean occupational earnings to white non-Hispanic mean occupational earnings is equal to the exponentiated difference between the logarithms of these quantities.

employment levels. The effect of schooling on both dependent variables is higher for non-Hispanics. For example, at the sixth grade level, the effect of an additional year of school for Hispanics is a one percent increase in occupational pay level ($e^{.0112} = 1.01$); for non-Hispanics, the effect is two percent ($e^{.0228} = 1.02$). Effects of English language ability on occupational characteristics are much stronger for Hispanics than for non-Hispanics. The coefficient of .0714 for speaking English indicates that, on average, Hispanics who speak it very well (a score of five on the fluency scale) engage in occupations which average 24 percent more pay than the occupations of Hispanics who speak only a few words of English (a score of two on the scale; $e^{(.0714 \times 3)} = 1.24$). For non-Hispanic whites, the effect of a similar difference in English language ability is a nine percent difference in occupational pay levels. Finally, Table 7 indicates that the direct effect of foreign birth on occupational earnings levels is an increase of about three percent for Hispanics and about 0.3 percent for non-Hispanics. The direct effect of foreign birth on occupational weeks worked is negligible — 0.7 percent for Hispanics and -0.5 percent for non-Hispanics.

SUMMARY AND CONCLUSIONS

Results suggest that much of the occupational inequality between Hispanic and non-Hispanic white men is explained by differences in schooling and English language fluency. Findings are most consistent with this conclusion when occupation is measured by SEI, and less so when measured by weeks worked and earnings levels (see Tables 3 and 6). However, closer scrutiny of findings suggests a pattern that might be

Table 7. Unstandardized Marginal Effects of Basic Model Variables for Hispanic and Non-Hispanic White Males

Independent Variable	Occupational Earnings (ln)		Occupational Weeks Worked	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Education (evaluated at 6 years)	.0112	.0228	.6394	2.5001
Education (evaluated at 12 years)	.0507	.0594	1.4159	1.7981
Experience (evaluated at 10 years)	.0154	.0162	.5236	.5526
English fluency	.0714	.0291	2.3913	.4832
Foreign birth	.0291	.0026	.6955	-.5261

Note: State-specific results for Hispanics weighted by Hispanic N's and state-specific results for non-Hispanics weighted by non-Hispanic N's.

called *conditional occupational assimilation*.⁹ If Hispanic men speak English "very well" and have completed at least 12 years of school, then their occupational achievement is close to that of white non-Hispanic men in the same geographic area with similar English fluency and schooling. However, at lower levels of English language proficiency and schooling, the occupations of Hispanics are inferior to the occupations of linguistically and educationally similar white non-Hispanic men. This pattern is suggested by results based on all three occupational measures, but is most evident in analyses of occupational pay levels: the crude difference is a 26 percent advantage for non-Hispanics, but drops to 14 percent when comparisons are limited to those with poor English and eight years of school, and falls to seven percent for high school graduates who speak English very well.¹⁰

Results suggest that conditional occupational assimilation is caused by gross inequality in the effect of English language fluency on occupation. For example, for not speaking English very well, Hispanics pay roughly twice the penalty in SEI paid by white non-Hispanics, and the Hispanic disadvantage in earnings and weeks worked is even larger (see Table 7). This greater penalty may result from unmeasured correlates of poor English fluency among white Hispan-

ics but not among other whites. Or it may result from greater employment discrimination against Hispanics than against non-Hispanic whites who do not speak English well. Richer data than the SIE would be required to choose between these explanations.

Conditional occupational assimilation appears to be largely unaffected by nativity and labor force experience. Although Hispanics gain less than non-Hispanics from the passing of each additional year after leaving school, this difference is small. Similarly, the direct occupational effect of foreign birth is very weak. Effects of foreign birth on SEI appears to be mediated through other characteristics of workers, most probably English language fluency and educational attainment. Because earlier analyses have found negative effects of foreign birth on earnings, my results seem to suggest that foreign birth has greater effects on the distribution of earnings among incumbents of the same occupation than upon the distribution of persons among occupations. In any case, nativity and experience do not directly alter conditional occupational assimilation.

Similarly, conditional occupational assimilation does not appear to be altered by the geography of American Hispanics. This is not to say that all places are the same for Hispanics. Rather, strong place effects appear to be unusual, confined to small geographic areas (see Portes and Jensen 1987) or to work indirectly through individual level variables. For example, some schools in some places may have special programs to prevent Hispanics from dropping out, thereby raising the years of schooling

⁹ Thanks to William Form for this observation.

¹⁰ These results are based on column three of Table 6. Percentage differences are obtained by exponentiating the non-Hispanic-Hispanic differences in logarithms.

completed by their Hispanic residents and, consequently, their occupational SEI.

My analyses of ethnic subgroup effects found that Cuban origin or ancestry has a moderate positive effect on Hispanic occupational SEI, net of geographic location and basic model variable effects. Interpretation of this finding raises several important issues which are related to the conceptualization of ethnic groups and their effects.

Ethnic groups exist only if they are recognized as such, and their members have distinctive norms, values and/or activities (Yinger 1985; Bean and Tienda 1987 Ch. 1). Thus, *ethnicity effects* include (1) consequences of those distinctive norms, values or activities, (2) consequences of being recognized as members of a particular ethnic group (e.g. discrimination), and, (3) interactions between 1 and 2. *Correlates* of ethnic group membership may affect the employment experiences of an ethnic group, but they would not be direct effects of ethnicity *per se*. For example, selective migration might produce unusual educational or occupational distributions of ethnic groups in the United States, but those effects would not be directly due to ethnicity.

Ideally, analysis of ethnicity effects would use separate variables for each dimension of ethnicity, including adherence to group norms, internalization of group values, participation in group activities, etc. Other variables might measure specific correlates of ethnicity. Lacking data to permit construction of such variables, one could rely on previous research to confirm that population groups of interest are ethnic groups, and then use dummy variables to represent these groups. Coefficients of these dummy variables would indicate the sum of all effects of ethnic group membership, plus the sum of effects of all correlates of ethnicity not explicitly measured by other variables in the analysis. Thus, if one accepts Bean and Tienda's (1987) argument that the SIE Hispanic subgroups are ethnicity groups, then the ethnicity coefficients reported here can be interpreted as evidence that the total direct occupational effect of Cuban ethnicity and its correlates is a moderate increase in occupational SEI above levels expected on the basis of Hispanic ethnicity, geographic location and individual characteristics. I do not find analogous effects for other Hispanic subgroups. If one seeks to estimate Hispanic-non-Hispanic differences in occupational achievement, then this pattern of Hispanic

subgroup effects, combined with the fact that Cubans are less than six percent of the American Hispanic population, suggests that little damage is done by ignoring Hispanic ethnic *subgroups*.

However, if one seeks to understand mechanisms by which ethnicity impinges on the workings of the labor market, then my results seem to call for more research on the specific processes which create the "Cuban effect." Such efforts might involve comparisons between Cubans and other Hispanics on specific dimensions of ethnicity, including adherence to specific norms, internalization of specific values, participation in specific activities. Focusing on correlates of ethnicity, one might ask if the "Cuban effect" is a lagged effect of the unique circumstances under which most Cubans entered the U.S. (see Bean and Tienda 1987) or, as a critic of this paper argued, simply the life-long consequence of the higher average social class origins of foreign-born Cubans.¹¹ Other fundamental questions concern identification of Cubans as a separate ethnic group: Do non-Hispanics distinguish between Cuban and non-Cuban Hispanics? If so, do they favor Cubans?

Whatever the outcome of further explorations into ethnicity-related mechanisms that produce occupational differences between Cubans and other Hispanics, it seems appropriate to stress again that these differences produce only modest departure from the conditional occupational assimilation of American Hispanic men: a pattern of greater occupational inequality between Hispanics and non-Hispanics of low educational attainment and poor English fluency, and smaller occupational differences between Hispanics and non-Hispanics who have at least 12 years of schooling and very good English language skills.

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¹¹ Recall that data analyzed here were collected in 1976, when most American Cubans were middle class refugees from the Cuban revolution.

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FOR WHAT IT'S WORTH: ORGANIZATIONS, OCCUPATIONS, AND THE VALUE OF WORK DONE BY WOMEN AND NONWHITES*

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Economic penalties against jobs employing disproportionate numbers of women or nonwhites vary across organizational context and occupational type. Analyses of prescribed pay rates for jobs in the California state civil service in 1985 suggest that work done disproportionately by women and nonwhites is devalued most in positions that are older, not represented by activist unions, have ambiguous performance criteria, or are most generic across organizational settings. We conclude that the extent of ascription depends on propensities toward devaluation in a given setting, prospects for collective action by disadvantaged groups, and the organizational costs and benefits (economic and otherwise) of recalibrating job worth to achieve pay equity.

"Comparable worth" has rekindled interest in a long-standing sociological concern (e.g., Davis and Moore 1945): why are some work roles viewed as worth more than others? Comparable worth advocates assert that ascription figures in the assignment of rewards to positions: jobs done predominantly by women and nonwhites are culturally devalued, relative to equivalent work done principally by white males. In contrast, economists often assert that job rewards reflect not only differences in skills, effort, responsibility, and working conditions, but also labor supply and demand factors (e.g., Killingsworth 1985). If the composition of jobs affects reward levels after controlling for compensable skills and requirements, they argue that this reflects an oversupply in female- or minority-dominated occupations or unmeasured aspects of labor demand, rather than employer discrimination (see England and Norris 1985; Nakamura and Nakamura 1989).

Neither the propensity nor the capacity to devalue work done by women and nonwhites is constant across jobs and organizations, however. Additional attention to the organizational context of reward allocations is therefore essential. This paper represents a move in that direction. We draw on several bodies of theory, as well as data describing California state civil service jobs, to test hypotheses about how the organizational setting influences the likelihood of ascription in evaluating job worth.

PREVIOUS RESEARCH: DISCRIMINATION OR MARKET FORCES?

Diverse studies indicate that positions dominated by women and nonwhites receive fewer rewards than comparable roles dominated by males and whites, even after differences in skills, working conditions, and labor market factors are taken into consideration. For in-

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stance, cross-sectional and longitudinal research reveals negative relationships between the percent female or nonwhite in an occupation on the one hand and average monetary rewards on the other, even controlling for average occupational skills and vocational requirements (see Strober and Arnold 1987; England and Dunn 1988). Controlled laboratory experiments and studies of occupational prestige ratings (Bose and Rossi 1983) also demonstrate that males and females ascribe less worth to work performed by women (Major, McFarlin, and Gagnon 1984; McArthur 1985; Deaux 1985).

Ironically, organizations have received surprisingly little attention in recent comparable worth research, despite the fact that comparable worth proponents often attribute pay discrimination to organizational causes and advocate organizational solutions. Do experimental findings and aggregate occupational research inform the behavior of actors who face the complex and controversial task of defining pay rates for real jobs in real organizations? Two recent longitudinal studies of organizations suggest that they do. Pfeffer and Davis-Blake (1987) examined pay determination in college and university administrative jobs, and Rosenbaum (1985) analyzed a large corporation. Both studies report a pattern of penalties consistent with previous research — strong negative effects on pay of the percent female in a job, even controlling for workers' skills and job requirements. (Rosenbaum also estimates penalties associated with the percentage of minority workers in a job title.) These studies suggest a general process of discrimination whereby work done by lower-status groups is devalued across diverse organizational settings.

Some economists attribute these effects to unmeasured supply and demand factors or differences in workers' traits across jobs (e.g., Bergmann 1974; Filer 1989). We find these economic arguments generally unconvincing. As England and Norris (1985) note, for instance, sex-role socialization is at least as likely to "crowd" men into traditionally male occupations as it is to concentrate women into female-dominated occupations. Nor do the effects of demographic composition on reward levels disappear after researchers control statistically for labor market conditions, such as differences across positions in unemployment and job growth (e.g., Baron and Newman 1989; Parcel 1989), or for differences in job content and working conditions that might warrant "com-

pensating differentials" in pay rates (e.g., Jacobs and Steinberg 1988).

Economists' alternative interpretations seem especially dubious in the context of the present study, which examines the pay structure of California civil service jobs. We employ extremely detailed controls for occupational distinctions and for job requirements, which presumably capture the relevant worker traits and characteristics of work roles affecting labor supply and demand. Arguments emphasizing "overcrowding" also seem somewhat at odds with the facts in this case. In the California civil service system during the period under study (1979-1985), men were no less concentrated in male-dominated jobs than were women in female-dominated jobs, and there was considerable movement of women into previously male-dominated classifications.¹ Furthermore, although civil service officials monitor pay practices outside state government, no formal mechanism exists linking pay rates to the marketplace. Indeed, in a recent discrimination lawsuit against the state, a judge concluded that "prevailing market wages" are irrelevant to most California civil service positions (U. S. District Court 1987, pp. 9-11).

Our study also undercuts arguments emphasizing unmeasured differences in workers' human capital. Most research in this area has examined the effect of the percent female or nonwhite in a position on incumbents' average wages. However, if men (whites) are more

¹The median full-time female civil servant was in a job that was 85.9 percent female in 1979 and 86.1 percent female in 1985. In contrast, the median full-time male's job was 92.9 percent male in 1979 and 84.8 percent male by 1985. In other words, male-dominated jobs became less so over this period, due largely to the movement of women out of previously female-dominated jobs. The typical female's job in 1979 lost 33 women and gained 2 men by 1985, whereas the typical male in 1979 was in a position that gained no men but added 6.5 women by 1985. Moreover, race- and sex-specific job distributions reveal only slightly greater "crowding" among women and scant differences by race. For instance, the five civil service job titles employing the most white men accounted for 21.6 percent of all full-time white male civil servants in 1985. Comparable crowding figures were 22.5 percent for nonwhite males, 27.1 percent for white females, and 28.6 percent for nonwhite females. (A similar pattern emerges across the detailed occupations in the Appendix.) While consistent with the claim of less crowding among white males, these differences hardly seem overwhelming.

experienced or productive than women (nonwhites) within most jobs, then one might observe a net negative effect of percent female (nonwhite) on average wages, even after controlling for job requirements (Smith 1989). We examine the *prescribed* or posted minimum starting pay rates for positions within the state pay structure, rather than incumbents' average wages. Human capital arguments cannot account for observed effects of demographic composition on the normative pay attached to a given civil service job (Michael and Hartmann 1989). We obviously do not mean to imply that pay differences among individuals within a job are irrelevant, only that a measure of prescribed pay may be more appropriate for examining how organizations price jobs rather than compensate individuals.

In sum, we believe past research on job worth implicates discriminatory pay-setting practices in organizations, which undervalue work done disproportionately by women and nonwhites. Yet neither the propensity to devalue jobs nor the capacity to do so is constant across work contexts. We posit that the tendency toward ascription in a given job having a predominance of female or nonwhite incumbents depends on characteristics of the setting affecting: the salience of gender and racial stereotypes; opportunities for collective action by women and nonwhites pursuing pay equity; and the monetary and nonmonetary costs of having biased rewards and of trying to rectify past bias in a given organizational context. After reviewing the setting of the present study, we develop these hypotheses in detail.

THE SETTING

Total employment in California state government agencies was approximately 150,000 as of March 1985, encompassing over 123,000 full-time civil servants. California state agencies range in size from commissions with fewer than ten full-time staff members to bureaucracies with over 10,000 employees. The California state civil service merit system, created in 1913, contains formal rules, procedures, and policies governing virtually every aspect of personnel management. Approximately 5,000 job titles exist across state agencies, although at any given time many of these are vacant. These job titles are organized within a centralized job classification system. The Department of Personnel Administration (DPA) was cre-

ated in 1981 to administer the civil service salary system, and that department has gradually gained jurisdiction over additional personnel matters formerly managed by the State Personnel Board (SPB) — particularly position classification.

Other personnel functions have been delegated to individual agencies over the past several years. Because of this trend, California state government agencies have considerable discretion over personnel activities. Therefore, differences in pay-setting practices across state agencies should have some generalizability in gauging the impact of organizational characteristics in other samples. However, the trend toward decentralized personnel administration has not been complete or uniform. The SPB continues to administer employment activities involving agencies too small to have their own personnel function and it is responsible for "service-wide" classes — jobs used by many agencies (e.g., general clerical classes). The SPB also ensures compliance with statutory and other legal mandates governing equal employment policies, affirmative action, and pay equity.

State agencies thus depend in part on a centralized personnel system and are subject to many of the same oversight mechanisms. They are therefore less independent than a sample of private sector organizations would be. This may reduce the likelihood of uncovering significant differences across organizational settings in the extent of ascription, relative to a sample of independent organizations. Moreover, we are likely to be conservative in assessing how the prescribed worth of jobs depends on gender and race composition. The California civil service is arguably as rationalized, open to scrutiny, and subject to pressures for reform as any personnel system in the private sector. Consequently, pay and personnel practices are likely to be less egalitarian in the private sector than in the California civil service.

HYPOTHESES

In previous research (Baron and Newman 1989), we found significantly lower prescribed starting pay rates in civil service jobs employing disproportionate numbers of women or nonwhites, even after detailed controls for job content and educational and experience requirements. Moreover, jobs in which the proportion of women or nonwhites *increased* between 1979 and 1985 experienced smaller increases in pre-

scribed pay than did otherwise comparable jobs staffed by white males, even when initial (1979) pay rates were controlled. These longitudinal results suggest that the biases do not simply mirror passively the larger labor market. If we interpret the effect of 1979 pay rates on 1985 rates as a control for the "market value" of each position, our analyses reveal that the relative standing of jobs within the state wage hierarchy nonetheless diminished as the percentage of female or nonwhite incumbents increased. Unless one attributes this entirely to a market reassessment of these positions between 1979 and 1985, which seems implausible, this evidence suggests that the state's personnel system is not benign.

In this paper, we examine how the extent of ascription varies across jobs and organizational settings. We identify factors, including historical founding conditions and psychological biases, which should increase ascriptive propensities when pricing jobs. We also identify factors that tend to work in the opposite direction by increasing either the costs to an organization of biased job rankings or the likelihood of collective action by aggrieved parties. Although the available data constrain us in formulating hypotheses, the analyses illustrate the kind of variations we believe warrant further study.

Job Age

Organizational theorists posit that the environment is "imprinted" on organizations at the time of founding and that arrangements appropriate to that period persist through structural inertia (Stinchcombe 1965; Hannan and Freeman 1984). A recent court case against the State of California uncovered a 1934 report, drafted by a state government official, which documents how historical founding conditions shaped the definition and evaluation of California civil service jobs. The report stated, for instance, that in establishing the initial salary schedules for civil service jobs, in addition to market and skill factors, "certain supplemental factors were also taken into consideration, namely, the ... age, sex, and standard of living of the employees normally recruited for a given [job]..." (Becker 1934, p. 62). Theories of organizational inertia imply that such propensities toward ascription among jobs founded in earlier eras will persist, whereas recently-created positions should be more sensitive to contemporary concerns with pay equity.

Union Representation

Some observers have viewed unions, especially in craft and trade occupations, as bastions of white male privilege, sustaining or even increasing inequities against women and nonwhites (e.g., Marshall 1974; Roos and Reskin 1984). In the public sector, however, collective bargaining has been a major force behind pay equity, in part because females and ethnic minorities represent major constituencies within many public sector unions. Unions have thus facilitated efforts at reform by disadvantaged civil servants, and so we predict less devaluation of work in state job classifications where collective bargaining affects reward allocations.

Unions in state government, as elsewhere, have varied in their enthusiasm toward pay equity, however. Some unions, especially those having large percentages of female members, have developed reputations as "activists," recognizing the strategic importance of pay equity for attracting and retaining members. Accordingly, our empirical analyses also examine whether the tendency of union representation to reduce ascription is greatest in those unions with the strongest reputations for activism on pay equity.

Job Idiosyncrasy

The extent to which a job is idiosyncratic (done by few workers in few organizational contexts) is likely to influence the tendency toward devaluation. The predicted direction of the effect, however, depends on which aspect of job idiosyncrasy is emphasized.

On the one hand, psychological theories of attribution and cognition (e.g., Kelley 1972; Kahneman and Tversky 1973) suggest that decision-makers faced with a single occurrence of a job title — or with jobs having few incumbents — would be especially prone to use ascriptive or stereotypical information as heuristics in assessing position worth. When a job is idiosyncratic or has few incumbents, it may be more difficult for those who classify jobs and determine compensation to transcend the biasing effects of demographic composition in defining the job and gauging its worth. If decision-makers can observe the same job across a diversity of settings, however, then ascriptive bias may be less prevalent. Similarly, large absolute numbers can mitigate some of the adverse effects of demographic composition:

for instance, a job having 1 male and 9 female incumbents may be perceived as more "female-dominated" than one having 100 male and 900 female incumbents, since it is cognitively easier to recall instances of men doing the latter job than the former (Crocker 1981; Kanter 1977, p. 238). This psychological reasoning implies that jobs with the fewest incumbents or occurring in the fewest settings are devalued most.

On the other hand, political and economic arguments suggest the opposite hypothesis. First, changing job definitions and pay rates within a bureaucratic personnel system often requires an advocate willing to lobby tirelessly for those changes to benefit his or her job (Miner 1987; Jean Ross, personal communication). Such advocacy may be more likely in jobs staffed by few people or limited to one agency than in large multi-agency classifications, in which "free-riding" and disengagement may be more pervasive. Second, large job classifications that cut across diverse organizational settings are likely to be subject to the strongest labor market pressures (Hildebrand 1963, pp. 274-6). Accordingly, one might expect greater penalties in these positions, because these generic jobs (e.g., secretary) are most likely to embody societal race and sex stereotypes, or to display the oversupply emphasized by economists. Idiosyncratic jobs, in contrast, are likely to involve greater training and turnover costs; agency managers may therefore have stronger economic incentives to price these jobs fairly. Furthermore, large "key" jobs employ many people and typically serve as benchmarks against which other jobs are compensated (Dunlop 1957), so it may be costlier and administratively more difficult to rectify underpayment in jobs that cut across many agencies and have many incumbents.

In sum, psychological theories suggest greater tendencies toward bias in idiosyncratic jobs. However, economic and political factors influencing how jobs are priced may be working in the opposite direction.

Occupational Ambiguity

Social criteria of proof are invoked most in novel or inherently ambiguous settings (Cialdini 1988). Accordingly, ascription is likely to shape job worth most when duties are ambiguous and performance is inherently difficult to gauge, as in administrative, supervisory, and professional roles (Kanter 1977; Auster and Drazin 1988).

Our previous argument about the likelihood of collective action by the aggrieved parties pertains here as well: when a job has ambiguous duties and performance criteria, it is presumably more difficult for incumbents to reach agreement about what the position (and each incumbent) is worth and to defend their views.

Summary

We have suggested that the extent of ascription in pay setting depends on the historical circumstances of a job's founding. Once defined and evaluated, civil service jobs are likely to be subject to inertial pressures, especially because the public, bureaucratic nature of the civil service system makes major changes administratively and politically costly. However, recent years have witnessed increasing attention to pay equity, providing opportunities for those interested in realigning the standing of female- and minority-dominated jobs. We predict that such realignments are most likely in settings involving the greatest opportunities for collective action by women and nonwhites, the fewest costs (or largest incentives) for rectifying past devaluation, and the weakest tendencies toward judgmental biases which incorporate ascriptive information in assessing job worth.

DATA AND METHODS

The Sample

We analyze data describing staffing patterns (by ethnic group and sex) and prescribed pay rates for all non-vacant job titles in the state civil service system as of March 31, 1985. These 3,188 titles employed 123,212 full-time civil servants.

Operationalization

Our dependent variable, perceived job worth, is operationalized as the prescribed minimum monthly starting pay in a title. Unlike a measure based on incumbents' average wages, this operationalization is not directly affected by the human capital, seniority, or productivity endowments of individuals within a job title. It thus measures the perceived relative worth of the job itself, which is the focus of our study, rather than an average characteristic of incumbents. Because the minimum and maximum prescribed pay rates in state civil service jobs

are almost perfectly related ($r > .95$ in 1985), supplementary analyses of maximum pay rates produced results similar to those reported here for minimum pay.²

Sex composition is measured as the percentage of full-time incumbents in each job who are female. Race composition is measured by variables indicating the percentage of full-time job incumbents who are black, Hispanic, or other nonwhites (predominantly Asians, in most job categories). Our analyses also include measures of the percentage of incumbents in each job who are black females, Hispanic females, and "other nonwhite" females. This specification assesses whether a predominance of nonwhite women affects reward levels over and above the main effects of sex and ethnic composition.³ (We use the terms "disproportionately-female" and "disproportionately-nonwhite" to refer to jobs with *relatively* large percentages of female or nonwhite incumbents, not that females or nonwhites are necessarily numerically dominant in any given position.)

There is no formal point system for judging the worth of California civil service jobs. Accordingly, we rely on the state's occupational classification system to define detailed families of jobs that the civil service identifies as having comparable duties and requirements. We include dummy variables to control for the 20 major "job category codes" used by the state for EEOC reporting (listed in Table 1). These controls capture differences in prescribed pay rates associated with major families of work roles, such as "Supervisory Professional," "Clerical," or "Janitorial/Custodial." In addition,

we control for 99 "schematic classes," which characterize very specific categories of work activities, such as "food services" within "Custodian and Domestic Services" (see Appendix).

All differences in prescribed pay rates across detailed occupational groups are removed statistically in our regression analyses before assessing the net effects of demographic composition on job worth. In other words, our analyses only assess "comparable worth" within narrow occupational families, rather than making comparisons across disparate types of jobs. Yet occupations may themselves be defined based on the typical sex and race of incumbents, a source of bias not captured in our analyses. Accordingly, our estimates of ascriptive penalties are likely to be conservative.

A previous paper (Baron and Newman 1989) assessed the net effects of demographic composition even more conservatively, controlling for 281 detailed schematic classes that represent finer subdivisions of the 99 occupational categories used as controls here (see Appendix). For a representative subset of state agencies and jobs, we also controlled for precise educational and experience requirements listed in written job specifications. These more precise controls did not substantially alter the pattern of results, either in the previous article or in testing any of the hypotheses in this paper (results available from authors).

We measure job idiosyncrasy as the number (\log_e) of state agencies in which a job had incumbents on March 31, 1985. Job age is measured as the number of years before March 31, 1985 that a given job title originated in the civil service. In supplementary analyses described below, we also analyze time since last civil service job revision, rather than time since founding. Union representation for each job is measured by a dummy variable denoting whether the position is covered by a collective bargaining unit. A measure of the "activism" of each collective bargaining unit was obtained by interviewing an individual who has worked for both the SPB and state employee unions (see below).

We measure job ambiguity indirectly, relying on the dummy variables distinguishing 20 "job category codes" (see Table 1). Categories corresponding to supervisory, administrative, and professional occupations are presumed to capture work roles in which performance is most difficult to gauge objectively. A more direct

² Similar results were also obtained using logged pay rates. We examined nonlinearities in the pattern of demographic effects (in cross-sectional and longitudinal specifications) as well, but the simplifying assumption of linear relationships appears reasonable.

³ We omit a measure of the percentage of white males in each job (which is redundant). Our specification is equivalent to one that includes variables for the percentage in each sex by ethnicity combination (excluding white males): the main effect of percent female in our models is equivalent to the effect for percent white female; our main effects for race are equivalent to the effects for the percentage of *males* in each ethnic group; and the effect for percent female of a given ethnicity is obtained in our models by adding the main effect of percent female to the main effect for that ethnic group and the corresponding interaction term.

measure of job ambiguity would clearly be preferable, but no objective, quantifiable indices are presently available.

METHODS

We test our hypotheses by examining whether effects of demographic composition on pay rates interact with organizational and occupational attributes. We first estimate a model of the form:

$$Y = \alpha + \sum_{i=1}^7 (\beta_i DP_i) + \sum_{j=1}^{19} (\gamma_j JCC_j) + \sum_{k=1}^{98} (\delta_k SC_k) + \varepsilon \quad (1)$$

where Y = 1985 prescribed minimum monthly starting pay in the job (in dollars); DP_i = demographic proportion variables (percent female, black, Hispanic, other nonwhite, black female, Hispanic female, and other nonwhite female); JCC_j = job category codes (see Table 1), with the "nonsupervising clerical" category omitted; SC_k = detailed schematic occupation codes (see Appendix), with the "office and allied services" category omitted; α = intercept; and ε = error term. We report results from models that vary in their controls (none, intermediate, or detailed) for job requirements, so that readers can gauge the extent to which the effects of demographic composition on pay rates reflect differences in job demands.

We then add interaction terms between demographic composition and the attributes in question. Rather than attempting to estimate models including many highly-correlated interaction terms, we estimate separate equations for each analysis of interactions. For instance, in testing our hypotheses concerning job idiosyncrasy, we estimate these models:

$$Y = \alpha + \sum_{i=1}^7 (\beta_i DP_i) + \sum_{j=1}^{19} (\gamma_j JCC_j) + \sum_{k=1}^{98} (\delta_k SC_k) + \phi(LNA) + \eta(PF \times LNA) + \varepsilon \quad (2)$$

and

$$Y = \alpha + \sum_{i=1}^7 (\beta_i DP_i) + \sum_{j=1}^{19} (\gamma_j JCC_j) + \sum_{k=1}^{98} (\delta_k SC_k) + \lambda(LNA) + \theta(PNW \times LNA) + \varepsilon \quad (3)$$

where LNA = job idiosyncrasy (log number of agencies job appears in), PF = percent female in job, and PNW = percent nonwhite in job.⁴ Similar models were estimated interacting percent female or percent nonwhite with job age, union representation, and the job category code dummy variables (to examine the effects of occupational ambiguity).

We report results from regression models in which each job is weighted in proportion to its number of incumbents.⁵ Almost one-quarter of the job titles in our sample are staffed by one incumbent, so by definition the percent female (and percent nonwhite) is either 0 or 100. Roughly two-thirds of these one-person titles are staffed by white males, many of whom occupy highly-paid administrative positions. Weighting jobs equally could produce artificially large negative effects of percent female and percent nonwhite on pay rates simply due to these jobs, which involve fewer than 1 percent of the state's civil servants. Alternatively, unweighted analyses might mask the ascription effects of interest. Jobs with one incumbent might not be strongly sex- or race-typed (i.e., there is no "typical" incumbent), but may appear to be so simply because of the sex and race of the specific incumbent occupying the position at the time it was observed. Consequently, the general effects of demographic composition on reward allocation would be obscured by many small perfectly-segregated jobs in which we would not expect to observe any ascription. Accordingly, we present weighted results to ensure that our findings and conclusions are not unduly influenced by a few very

⁴ We combined the percentage black, Hispanic, and other nonwhite into percent nonwhite in estimating race interaction effects. We had no hypotheses about differences in the way specific race categories interact with the variables under study. Moreover, given the small percentage of workers in certain race categories, we thought it prudent to combine them in examining interactions.

⁵ That is, the weights were scaled to sum to the actual number of jobs involved.

Table 1. Descriptive Statistics (Unweighted and Weighted by Number of Employees) for 3,188 California Civil Service Jobs, 1985

Variable or Job Category	Mean	S.D. ^a	Mean	S.D. ^a
<i>Variable</i>				
Prescribed monthly entry pay (\$)	2487.70	858.85	1860.31	642.81
Percent female	27.38	35.48	44.19	35.44
Percent black	7.10	16.22	11.29	9.52
Percent Hispanic	8.25	16.84	12.23	7.94
Percent other nonwhite	9.96	18.68	10.80	9.04
Percent black female	3.05	10.79	6.10	6.29
Percent Hispanic female	2.18	7.52	5.63	6.37
Percent other nonwhite female	2.95	9.38	5.33	6.52
Log _e number of agencies job is in	.17	.35	.64	.73
Whether job unionized	.54	—	.81	—
Union activism (0-10)	2.78	3.02	4.32	2.89
Years since job founded	18.89	15.17	24.16	17.92
Years since job last revised	6.99	6.45	4.84	4.30
<i>Job Category</i>				
Clerical job	.03	—	.16	—
Supervisory clerical job	.03	—	.04	—
Semiskilled job	.02	—	.03	—
Craft/trade job	.03	—	.03	—
Supervisory craft/trade job	.06	—	.04	—
Professional job	.20	—	.16	—
Supervisory professional job	.18	—	.08	—
Subprofessional/technical job	.08	—	.13	—
Supervisory subprofessional/technical job	.05	—	.03	—
Law enforcement job	.00	—	.10	—
Supervisory law enforcement job	.01	—	.02	—
Field representative job	.03	—	.03	—
Supervisory field representative job	.04	—	.02	—
Administrative staff job	.07	—	.05	—
Supervisory administrative staff job	.07	—	.03	—
Administrative line job	.08	—	.01	—
Janitorial/custodial job	.01	—	.03	—
Supervisory janitorial/custodial job	.01	—	.01	—
Laborer job	.00	—	.01	—
"Career opportunity development" job	.01	—	.01	—
<i>Number of job incumbents</i>	38.65	234.15	1456.79	2120.62

^a S.D. = Standard deviation. Standard deviations not shown for dichotomous variables.

Note: Data based on 3188 titles employing 123,212 full-time civil servants. Measures for "Years since job founded" and "Years since job last revised" are based on 3021 job titles with 117,288 employees.

small positions, in which measures of demographic composition are highly skewed and unstable.⁶

RESULTS

To aid readers in gauging the magnitude of effects, Table 1 reports descriptive statistics for the main variables analyzed in this study. To

simplify the table, we omit descriptive statistics for the detailed occupational controls and the numerous interaction terms. Weighted and unweighted statistics are reported to show how characteristics of the "typical" position depend on the weight given to the many one-person titles within the state civil service.

jobs. In supplemental analyses, we eliminated the five largest job titles — Office Assistant II (Typing), Office Assistant II (General), Psychiatric Technician, State Traffic Officer, and Correctional Officer — which together employed 25,039 (20.3%) full-time civil servants in 1985. The results were virtually

⁶ Statistical effects actually were larger, not smaller, in weighted analyses than in comparable unweighted analyses (see Baron and Newman 1989). This pattern does not appear to be an artifact of a few large outlier

Table 2. OLS Effects (In Dollars) Of Demographic Composition On Prescribed Minimum Monthly Starting Pay In 3,188 California Civil Service Jobs, 1985

Effect of:	Model Including:					
	(1)		(2)		(3)	
	Demographic Composition		Demographic Composition and 20 Major Job Categories ^a		Demographic Composition, 20 Major Job Categories, and 99 Schematic (Occupational) Categories ^b	
Percent female	-10.36	(-18.12)	-9.72	(-19.67)	-7.83	(-19.64)
Percent black	-21.19	(-14.99)	-12.91	(-11.00)	-8.21	(-8.42)
Percent Hispanic	-21.83	(-13.55)	-13.00	(-10.24)	-8.30	(-9.32)
Percent other nonwhite	-2.80	(-2.13)	-10.21	(-9.70)	-6.25	(-7.68)
Percent black female	11.26	(4.04)	6.68	(3.13)	2.18	(1.41)
Percent Hispanic female	3.98	(1.36)	4.26	(1.88)	2.15	(1.32)
Percent other nonwhite female	4.67	(1.86)	13.51	(7.03)	6.47	(4.84)
Constant	2728.50	(105.40)	2342.77	(67.54)	2138.61	(64.88)
\bar{R}^2	.49		.72		.89	

Notes: Jobs weighted in proportion to number of incumbents. T-statistics shown in parentheses. Coefficients of determination are adjusted for degrees of freedom.

^a See Table 1.

^b See Appendix.

Table 2 reports OLS regression results for several basic models predicting 1985 prescribed minimum monthly starting pay (without interaction terms). Column (1) reports results from a model including only variables measuring demographic composition. Column (2) reports coefficients for the demographic composition variables from a model that also controls for the 20 major "job category codes" listed in Table 1. Finally, column (3) summarizes the model described in equation (1), which adds 98 dummy variables to control for detailed schematic categories (at the second level of detail shown in the Appendix). The corresponding t-statistic (two-tailed) is shown in parentheses for each coefficient. To simplify the table, we omit the effects of the occupational controls.

These results document substantial penalties in prescribed pay associated with the prevalence of women and nonwhites in civil service jobs. For instance, even after the most detailed controls for job content and requirements, model

identical to those reported in Table 2. The stronger weighted effects appear to reflect a genuine tendency towards less ascription in idiosyncratic jobs with few incumbents than in large, multi-agency positions (see below).

3 of Table 2 reveals that a job done exclusively by white females would have a monthly starting pay rate \$783 lower ($-\7.83×100) than a comparable job staffed completely by white males. The main effects of race composition are of roughly equal magnitude. The only significant interaction concerns jobs with a relatively large percentage of "other nonwhite" (predominantly Asian) female incumbents, in which the penalties appear approximately equal to those associated with the presence of white females (for additional details, see Baron and Newman 1989). The remainder of this paper focuses on whether these penalties vary across settings as hypothesized.

Job Age

We hypothesized that devaluation would be more extreme among older jobs, reflecting stronger gender and racial stereotypes governing perceptions of job worth. We examined this hypothesis in several ways. First, we estimated weighted regressions incorporating interactions between job age and demographic composition. Table 3 reports these analyses, based on models adding a main effect for job age and interactions with demographic compo-

Table 3. Interaction Effects Between Demographic Composition and Job Age: OLS Regressions, Prescribed Minimum Monthly Starting Pay in 3,021 California Civil Service Jobs, 1985

Variable	Model Including:								
	(1)			(2)			(3)		
	Demographic Composition			Demographic Composition and 20 Major Job Categories			Demographic Composition, 20 Major Job Categories, and 99 Schematic (Occupational) Categories		
	A	B	C	A	B	C	A	B	C
Job age (years since founding)	-6.26 (-8.88)	-1.29 (-1.17)	14.61 (5.92)	-2.29 (-3.89)	1.42 (1.54)	4.63 (2.34)	-.86 (-1.95)	-.17 (-.25)	3.41 (2.45)
Job age \times percent female	.08 (5.79)		-.19 (-2.94)	.06 (5.28)		.02 (0.48)	.05 (4.81)		-.02 (-.61)
Job age \times percent nonwhite		-.07 (-2.18)			-.05 (-1.86)			.02 (1.16)	
Job age at most recent revision			-22.13 (-8.83)			-7.45 (-3.68)			-4.56 (-3.23)
Job age at most recent revision \times percent female			.28 (4.61)			.04 (.88)			.07 (2.04)
\bar{R}^2	.51	.50	.52	.71	.71	.71	.88	.88	.88

Notes: Jobs weighted in proportion to number of incumbents. T-statistics shown in parentheses. Coefficients of determination adjusted for degrees of freedom.

sition to the three models specified in Table 2.⁷

In the case of minority composition, underpayment based on race composition is greater among jobs founded earliest within the California civil service, as predicted, and the coefficient is reduced only slightly after controlling for the 20 major job categories (see models 1B and 2B, Table 3). However, controls for the 99 detailed schematic classes render the effect statistically insignificant (model 3B). In other words, older jobs in which minorities are over-represented are concentrated in specific schematic classes that pay less than recently-established job titles in which minorities are prevalent.

These older classifications appear to involve lower-skilled occupations subject to especially

strong stereotypes about the diminished worth of work by nonwhites. For instance, among the large jobs having high scores on the minority/job age interaction are: Janitor (nearly 1800 incumbents), Laborer, Housekeeper, Launderer Assistant, Window Cleaner, Auto Pool Attendant I, Supervising Housekeeper I, and Toll Collector, all positions that might involve stronger racial stereotypes than newer occupations where minorities are prevalent. Once we take account of the concentration of nonwhites within those classifications, the net effect of job age becomes insignificant.

One interpretation of this result is that job age has no net effect on race-based ascription. Another possibility is that racial distinctions were more strongly embedded within the civil service occupational classification system in the past than in the present. Conk (1978) has documented how race and other considerations helped define the U.S. Census Bureau's scheme for classifying occupations, and we noted above how similar ascriptive stereotypes apparently pervaded the state civil service system in the past. If particular jobs were assigned to de-

⁷ To simplify and condense the presentation, we do not report constants and main effects of demographic composition in Table 3 and several other tables (5-7) summarizing the addition of interaction effects to the specifications in Table 2. These omitted coefficients (available on request) do not differ appreciably from the values reported for the corresponding model in Table 2.

tailed occupations in the past based on racial stereotypes, this could explain why the job-age interaction in Table 3 vanishes after occupational controls, since those occupational distinctions were *designed* in part to embody the notion that lines of work dominated by non-whites were worth less.

Table 3 shows that the gender interaction is positive and significant, even after controlling for job category and detailed schematic code (models 1A, 2A, and 3A). This implies *less* devaluation in older jobs, contrary to our prediction. In retrospect, such a result might be reasonable. Highly bureaucratized and rationalized pay systems can only achieve pay equity incrementally without compromising internal equity. It may therefore take a long time before the devaluation of a "women's" job built into its original definition can be remedied through gradual pay adjustments. Ours is a sample of survivor job titles, the oldest of which may embody stronger ascriptive biases from their era of founding but also have been at risk of incremental reforms longer.⁸ (Indeed, old jobs in which initially-biased pay rates were not recalibrated may have been eradicated.) Pressures for pay equity have been applied almost exclusively to female-dominated, rather than minority-dominated, civil service jobs, which may explain why this pattern of effects obtains only for the interaction between job age and percent female. If our revised hypothesis is correct, then given two female-dominated jobs founded at the same time, the one revised most recently has been exposed to comparable worth pressures over a longer period and should thus evidence less gender bias.

We tested this hypothesis in supplementary analyses (not shown), adding three variables to the models reported in Table 2: number of years since a job was created; number of years between its creation and latest revision; and interaction between the latter and percent female. As expected, the interaction was posi-

⁸ In the California civil service system, a job's prescribed worth can be recalibrated without cumbersome formal revision of the job description. One such adjustment took place in January 1985, especially in female-dominated clerical titles, as part of a collective bargaining agreement to redress pay inequities. Such adjustments create a variance between the pay rate that would normally apply, given the job's location within the civil service pay hierarchy, and the actual prescribed monthly pay assigned to the position.

Table 4. Effect of One Percentage-Point (1%) Increase in Percent Female on Prescribed Minimum Monthly Starting Pay for Jobs of Different Ages

Job Created	Job Last Revised	Model Controlling for:	
		Demographic Composition	Demographic Composition and All Job/Occupation Categories
1985	1985	-\$11.38	-\$8.23
1980	1985	-\$10.88	-\$7.98
1980	1980	-\$12.30	-\$8.34
1960	1985	-\$ 8.89	-\$6.99
1960	1980	-\$10.31	-\$7.35
1960	1965	-\$14.58	-\$8.41
1960	1960	-\$16.00	-\$8.77

Source: Based on Models 1C and 3C in Table 3.

tive and highly significant ($b = 0.11$, $t = 7.75$) in analyses controlling for demographic composition, as well as in analyses including controls for job category and detailed occupation ($b = 0.05$, $t = 5.34$). We then added a fourth variable — the interaction between job age and percent female — to these three, and the results of these analyses are reported in models 1C, 2C, and 3C of Table 3. Controlling only for demographic composition, we obtain significant results consistent with our conjecture: the older the job, the more severe the penalties against women's work; however, given two jobs founded contemporaneously, the one revised most recently is likely to involve less severe biases, having had more recent opportunity to incorporate contemporary pay equity concerns. These effects diminish considerably in models including occupational controls, however, in which there is substantial collinearity.

Table 4 illustrates the magnitude of these job-age effects, based on models 1C and 3C from Table 3. The gross ascriptive penalties associated with job age and the benefits associated with recent job revisions are clearly substantial. Consider the contrast between an all-female and all-male position. According to model 1C, the gender gap in 1985 pay rates is \$462 greater per month for jobs founded in 1960 and never revised than for jobs created in 1985 (i.e., $[-\$16.00 - (-\$11.38)] \times 100 = -\$462$). Controlling for job category and occupational distinctions (model 3C) reduces these effects considerably, but not entirely: the corresponding

Table 5. OLS Effects of Demographic Composition on Prescribed Minimum Monthly Starting Pay in 728 "New Jobs" and 2,293 "Old Jobs" in the California Civil Service, 1985

Variable	Model Including:					
	Demographic Composition		Demographic Composition and 20 Major Job Categories		Demographic Composition, 20 Major Job Categories, and 13 Major Schematic Categories	
	Old Jobs	New Jobs	Old Jobs	New Jobs	Old Jobs	New Jobs
Constant	2761.06 (96.91)	2463.41 (-4.31)	2299.05 (59.78)	2191.57 (-1.99)	2367.27 (59.33)	2375.10 (.17)
Percent female	-10.77 (-17.18)	-6.35 (2.94)	-9.26 (-16.36)	-9.12 (.12)	-11.09 (-20.63)	-10.79 (.29)
Percent black	-21.85 (-14.61)	-6.01 (2.96)	-13.89 (-10.82)	-5.58 (2.02)	-12.28 (-10.06)	-7.84 (1.24)
Percent Hispanic	-22.51 (-12.73)	-20.43 (.44)	-11.68 (-8.16)	-19.89 (-2.29)	-8.08 (-6.32)	-18.17 (-3.26)
Percent other nonwhite	-3.37 (-2.31)	-.25 (.92)	-12.07 (-10.08)	-6.49 (2.13)	-7.65 (-6.74)	-3.16 (1.99)
Percent black female	8.83 (2.74)	5.11 (.48)	4.44 (1.74)	1.15 (.55)	3.64 (1.64)	4.51 (.17)
Percent Hispanic female	5.64 (1.68)	5.88 (.03)	5.35 (2.01)	8.49 (.52)	5.16 (2.11)	9.58 (.85)
Percent other nonwhite female	6.54 (2.23)	-7.36 (-2.12)	17.09 (5.44)	5.25 (-2.35)	14.15 (6.87)	3.05 (-2.57)
\bar{R}^2	.50		.71		.79	

Notes: Jobs weighted in proportion to number of incumbents. T-statistics (in parentheses) test whether effects for old jobs are significantly different from zero and for new jobs are significantly different from old jobs.

gender gaps are \$877 per month for a job founded in 1960 (and unchanged since then) versus \$823 for jobs founded in 1985, a difference of \$54. In the course of a year, this difference in penalties ($\$54 \times 12 = \648) represents over one-third of one month's prescribed starting salary for the typical state civil servant (see Table 1).

Job-age effects were examined in a second set of analyses. If pressures for pay equity have been concentrated in the last decade or so, perhaps the key distinction is between recently-created jobs and all others, rather than differences, say, between jobs founded in 1930 and 1960 (P. England, personal communication).⁹ Accordingly, we divided jobs into two "cohorts": those founded before vs. after the middle of 1978. This date was selected because in

1978 the state legislature "clarified and passed as law important mandates that had been evolving in the affirmative action program" (California State Personnel Board 1981, p. 2200.3).¹⁰ Table 5 reports regressions comparing ascription in these two cohorts.¹¹ The table reveals less ascription among the newer positions. For instance, controlling only for demographic composition, the older cohort of jobs was pe-

¹⁰ The Governor signed legislation authorizing comparable worth for female-dominated civil service jobs in September, 1981, which suggests another sensible date for dividing cohorts of jobs. Ascriptive penalties were generally smaller among this cohort; however, the number of jobs involved is quite small.

¹¹ Estimating separate models for old and new jobs necessitated using a less detailed set of schematic categories as occupational controls, due to the limited number of positions in the "new job" subsample. The models in Table 5 constrain the effects of the occupational controls to be equal between old and new jobs. Allowing those effects to vary does not alter the results appreciably.

⁹ However, descriptive statistics in Table 1 suggest that much of the action in Table 3 is in comparing jobs founded (revised) before vs. after the 1970s, when employment equity became salient.

nalized \$4.42 more for each percentage point of (white) females than were jobs founded after mid-1978. The monthly penalty associated with the presence of blacks was also larger (\$15.84 more per percentage point). However, there was an unanticipated increase in the penalty associated with "other nonwhite" females among the younger cohort of jobs.

This evidence of reduced ascription in newer jobs largely vanishes after occupational controls. The intercept differences also change across specifications. Controlling only for demographic composition, a new job held exclusively by white males received nearly \$300 less per month to start in 1985 than did an old job with the same composition, and a decrement of more than \$100 per month remains after controlling for major job category. After controlling for major schematic category, however, there is essentially no difference in intercepts between the two cohorts. Looking at the raw difference in means, without any statistical controls, new jobs actually paid \$90.40 more per month to start than old jobs. In other words, the typical new job paid more, *but not the typical new job done by white men*. This suggests that new jobs being added to the traditionally female and nonwhite segments of the state occupational structure were being upgraded in the pay hierarchy more than were new jobs done by white men. This no doubt partly reflects collective bargaining agreements calling for pay equity. Given the prevalence of women in several major occupations (especially clerical) where pay equity reforms have been concentrated, it is not surprising that the improvement in jobs employing relatively large percentages of women vanishes after controls for occupation and industry.

More surprising is the apparent net *increase* in penalties among new jobs in which Hispanics and other nonwhite (mostly Asian) females are prevalent. Perhaps efforts to upgrade the standing of jobs done by blacks and white women have occurred partly at the expense of these other minority groups that have been less outspoken on pay equity. However, there is substantial collinearity in models including demographic and occupational/industry measures, so these results warrant caution.

In sum, ascription varies with job age, although not entirely as originally predicted. Our cohort analysis revealed reduced effects of percent female and percent black on reward allocations among newer jobs, as hypothesized,

but there were also several indications of increasing ascription along ethnic lines. The pattern of results in Tables 3 and 4 was also more complex than our original hypothesis — for instance, there was less ascription in older, recently-revised jobs (e.g., titles created in 1960 and revised in 1985) than in recently-created jobs, a finding we did not anticipate. After the fact, we suggested that older survivor jobs within the civil service may have been susceptible to recent pressures for pay equity, having been targets of reform efforts for longer periods of time (and having survived those efforts).

Union Representation

California civil service employees became eligible to join unions in 1982. As of March 31, 1985, roughly half the full-time civil servants (and about five-eighths of all full-time unionized employees) belonged to the California State Employees Association (CSEA), which is affiliated with the Service Employees International Union. However, many state employees belong to other unions. Not surprisingly, these unions have varied in their enthusiasm for pay equity. To assess whether activist unions have offset ascription, we interviewed an expert who has worked for both the CSEA and SPB and is knowledgeable about unions' postures towards employment equity. This individual rated each collective bargaining unit on a ten point scale, with "10" denoting the most activist and "1" denoting the most resistant toward affirmative action, equal employment policies, and pay equity.¹² We thus examined not only whether the effects of demographic composition vary between unionized jobs and other positions, but also whether that effect depends on the activism of the union. We did so by estimating models that added main effects for whether a job was unionized and for the activism score pertaining to the relevant union (non-union jobs received scores of "0"), and interacted those variables with demographic composition. Results are reported in Table 6.

Models that do not control for job or schematic category mask offsetting influences at work: unionized women, particularly those represented by activist unions, are in less-skilled

¹² Of course, rankings obtained from one rater can be subject to error. The expert's ratings seem consistent with other information we have about union activism concerning pay equity.

Table 6. Interaction Effects Between Demographic Composition and Unionization: OLS Regressions Prescribed Minimum Monthly Starting Pay in 3,188 California Civil Service Jobs, 1985

Variable	Model Including:											
	(1)				(2)				(3)			
	Demographic Composition				Demographic Composition and 20 Major Job Categories				Demographic Composition, 20 Major Job Categories, and 99 Schematic (Occupational) Categories			
	A	B	C	D	A	B	C	D	A	B	C	D
Unionized job	-575.43 (-17.22)	-491.60 (-10.58)	-520.04 (-15.48)	-524.62 (-15.94)	-175.68 (-5.02)	-90.08 (-2.12)	-76.20 (-2.24)	-114.41 (-3.35)	-314.48 (-11.22)	-296.21 (-9.21)	-226.46 (-7.53)	-306.44 (-10.67)
Union activism	-16.44 (-2.62)	4.09 (.72)	8.24 (1.00)	18.54 (2.00)	-33.40 (-6.07)	-23.56 (-4.56)	-63.21 (-8.84)	-38.38 (-4.88)	-2.61 (-.46)	13.93 (2.78)	-24.55 (-3.46)	10.98 (1.65)
Unionized × % female	4.79 (7.00)				2.74 (4.62)				2.53 (5.94)			
Unionized × % nonwhite		-.90 (-.66)				-1.66 (-1.49)				-.62 (-.86)		
Activism × % female			-0.07 (-0.75)				.66 (7.78)				.49 (7.45)	
Activism × % nonwhite				-0.45 (-2.02)				.43 (2.38)				.07 (0.54)
R ²	.58	.57	.57	.57	.74	.73	.74	.73	.90	.90	.90	.90

Note: Jobs weighted in proportion to number of incumbents. T-statistics shown in parentheses. Coefficients of determination adjusted for degrees of freedom.

occupational categories, which lowers their pay; but they also benefit from the efforts of their unions to redress pay inequity, which raises the pay rates of their jobs relative to comparable non-union classifications. Once we control for differences in union coverage across occupations (models 3A-3D), those benefits become apparent. Jobs in which women are prevalent have benefitted significantly from union representation, particularly by activist unions.¹³ For instance, according to model 3A, an additional

percentage point of white females decreases prescribed monthly starting pay by \$9.18 among nonunion jobs (this is the main effect of percent female, not reported in Table 6), compared to an effect of \$6.65 (-9.18 + 2.53) among unionized jobs. The effect is further reduced (to \$4.34) among jobs represented by the most "activist" unions (model 3C). In contrast, penalties against jobs represented by the least activist unions are not very different (only \$0.49 smaller per percentage point female) than in non-union jobs.¹⁴

After controlling for detailed occupation (models 3B and 3D), the effects of unionization and union activism do not appear to characterize jobs in which nonwhites were over-represented in 1985. Females represent a larger potential constituency than nonwhite males for

¹³ For jobs which had incumbents in 1979 and 1985, we estimated identical regressions for prescribed pay rates in 1979, before unionization. (In other words, we characterized jobs in 1979 in terms of their unionization status and union activism six years hence.) This comparison allowed us to examine whether the reduced penalties against women's work were due to the intervening unionization.

These analyses revealed that female-dominated jobs that later came under the purview of activist unions were already penalized slightly less before unionization than comparable civil service jobs. However, unionization and union activism definitely strengthened that effect (details available from authors on request).

¹⁴ Non-union jobs have a score of zero on activism so the main effect for percent female characterizes non-union jobs. Unionized positions are scaled from 1 (least activist unions) to 10. In model 3C, the main effect of percent female is -9.24, which implies an effect of -9.24 + .49 = -8.75 for jobs covered by the least activist unions, and -9.24 + 10(.49) = -4.34 for jobs represented by the most activist unions.

Table 7. Interaction Effects Between Demographic Composition and Job Idiosyncrasy: OLS Regressions, Prescribed Minimum Monthly Starting Pay in 3,188 California Civil Service Jobs, 1985

Variable	Model Including:					
	(1)		(2)		(3)	
	Demographic Composition		Demographic Composition and 20 Major Job Categories		Demographic Composition, 20 Major Job Categories, and 99 Schematic (Occupational) Categories	
	Model A	Model B	Model A	Model B	Model A	Model B
Job idiosyncrasy (log number agencies)	245.60 (8.86)	411.51 (10.68)	48.48 (2.06)	149.70 (4.55)	9.23 (.43)	16.49 (.60)
Job idiosyncrasy × percent female	-4.40 (-11.59)		-1.44 (-3.97)		-.98 (-2.91)	
Job idiosyncrasy × percent nonwhite		-11.52 (-12.33)		-4.89 (-5.92)		-1.58 (-2.38)
\bar{R}^2	.51	.51	.72	.73	.89	.89

Notes: Jobs weighted in proportion to number of incumbents. T-statistics shown in parentheses. Coefficients of determination adjusted for degrees of freedom.

many unions representing state civil servants (44 percent female vs. 17 percent nonwhite males among full-time state government workers in March, 1985). Consequently, some unions may have been more aggressive recently in tackling gender inequities rather than racial ones. Moreover, our measure of union activism was obtained from an informant in a better position to evaluate the efforts of unions on behalf of women than ethnic minorities. These factors may help explain the stronger effects of unionization and union activism on pay equity by sex than by race in our analyses.

Job idiosyncrasy

Table 7 examines the interaction between job idiosyncrasy and demographic composition in relation to pay setting. (Note that large positive values on our measure denote the *least* idiosyncratic positions, whereas jobs are most idiosyncratic when they appear in only one agency.) As there is substantial collinearity between main and interaction effects, the findings should be interpreted cautiously.

Contrary to information-processing arguments, penalties associated with the presence of women or nonwhites appear substantially larger in jobs that occur in numerous organizational settings. The effects in Table 7 are by no means trivial, even controlling for job category

and detailed occupation. For instance, the job titles we analyzed were dispersed among as many as 95 state agencies. Among titles used by 50 of these agencies, a one-point increase in percent female is predicted to depress prescribed monthly starting pay by \$11.05, compared to an effect of \$7.22 among agency-specific titles (model 3A). Similarly, each percentage-point nonwhite reduces prescribed monthly starting pay by \$6.18 *more* among titles found in 50 agencies than in single-agency classes. In other words, the contrast between all-male and all-female jobs yields a monthly penalty that is \$383 smaller among agency-specific titles than among similar jobs found in 50 agencies, and the penalty against jobs staffed entirely by nonwhites (vs. all-white jobs) is \$618 smaller in single-agency titles than in the fifty-agency titles. These illustrations show how moderate statistical effects can substantially affect individuals' pocketbooks.

Ascription is also greater in titles having large numbers of incumbents. Two sets of results support this claim. First, the weighted regressions reported here invariably reveal stronger penalties associated with the prevalence of women and nonwhites in jobs than did unweighted analyses (see Baron and Newman 1989). Second, in supplementary analyses, we substituted the number (log_e) of employees for the log number of agencies as an alternative

measure of job idiosyncrasy. (These supplementary regressions were not weighted by employment because it seemed redundant to interact demographic composition with job size and weight by job size.) These analyses produced results similar to those in Table 7. For instance, in a model controlling for detailed occupational distinctions (as in model 3 of Table 2), log job size had a significant negative main effect ($b = -56.77$; $t = -8.40$) and a significant interaction with percent female ($b = -0.32$; $t = -2.34$). In an identical model interacting job size with percent nonwhite, the main effect of log job size was significantly negative ($b = -40.21$; $t = -5.05$), as was the interaction term ($b = -0.94$; $t = -4.38$).¹⁵ According to these results, a ten-fold increase in job size increases by \$0.73 the penalty for each percentage point female in the title and by \$2.16 the penalty associated with each one percent nonwhite. The fact that large, generic jobs penalize females and nonwhites most suggests that the effect is not due merely to an oversupply in these jobs; as Bergmann (1974, pp. 105-6) notes, crowding seems less applicable to racial inequalities in the U.S. than to gender differences, and there was little evidence of minority crowding in our sample (see note 1).

Occupational Ambiguity

We hypothesized greater devaluation in positions having the least objective performance criteria. Since we lack direct measures of ambiguity in each job, we use the broad job categories in Table 8 as proxies, assuming that evaluation is most ambiguous in supervisory, administrative, and professional work, compared to clerical, manual, or routine technical jobs. These models also controlled for the 99 detailed occupational categories, capturing differences in specific job content. This makes for a strict test of the hypothesis, since it regards all pay differences across detailed occupations as market- or task-related and thereby ignores any potential ascription in the assignment of jobs to occupational categories (e.g., professional-hospital dietician, a female-dominated position that is classified as food service

work, rather than as medical-related). Results are reported in Table 8.

Because women are concentrated in sex-typed clerical positions, we specified clerical work as the omitted or reference category for the main effect of major job type and its interaction with percent female. Consistent with our hypothesis, the negative effect of percent female on prescribed pay rates is significantly greater in the following job categories than in clerical work: supervisory professional, supervisory subprofessional/technical, administrative line, administrative staff, supervisory administrative staff, and supervisory field representative.¹⁶ In contrast, the penalty associated with the presence of females was *less* severe in supervisory clerical jobs than in other clerical positions. Perhaps the wage structure reflects a cultural belief that it is appropriate for women to supervise traditionally female (i.e., clerical) work, or at least more appropriate than supervising other kinds of work (see Kanter 1977, pp. 203-4). The remaining job categories, which tend to involve more routine and non-supervisory job duties, do not differ significantly from clerical work in the effects of gender composition on prescribed pay rates. Thus, the evidence seems generally consistent with the claim that work done disproportionately by women is penalized most in occupations where work outcomes are most ambiguous.

For nonwhites, janitorial and custodial work is stereotypical in much the same way that clerical work is for women, so we used that as the reference category in interacting race composition with occupational type. The negative effect of percent nonwhite is significantly weaker in janitorial jobs than in professional work, law enforcement,¹⁷ clerical jobs, administrative staff positions (although the effect was slight), and jobs serving as field representatives for state agencies. Thus, race-based devaluation seems strong in several non-supervisory white-collar occupational categories, as well as in supervisory and administrative jobs. In other words,

¹⁶ The contrast between supervisory field representative and clerical jobs is significant at the .03 level on a one-tailed test.

¹⁷ The large effects involving law enforcement are consistent with allegations of long-standing racial discrimination in pay and job assignments involving "uniformed" job classes within the civil service, which have resulted in the past in SPB reprimands, employment targets, and monitoring of a number of the agencies and positions involved.

¹⁵ In models interacting demographic composition with (log) number of agencies and number of incumbents, only interactions involving the latter remained significant, suggesting that the number of organizational settings in which a job is found has less impact on ascription than the number of incumbents.

Table 8. Interaction Effects Between Demographic Composition and Job Type: OLS Regressions, Prescribed Minimum Starting Pay in 3,188 California Civil Service Jobs, 1985

	Model Interacting Job Type With:	
	% Female	% Nonwhite
<i>Job Type Interactions</i>		
Clerical	— ^a	-9.83 (-3.38)
Supervisory Clerical	2.48 (2.18)	-8.16 (-2.29)
Semiskilled Labor	.95 (.26)	-0.95 (-.31)
Craft/Trade Labor	-1.20 (-.48)	5.08 (1.50)
Supervisory Craft/Trade	.91 (.23)	-.88 (-.28)
Professional	-.80 (-.92)	-5.89 (-2.18)
Supervisory Professional	-3.37 (-3.42)	-5.80 (-2.05)
Subprofessional/Technical	-.43 (-0.47)	-6.92 (-2.55)
Supervisory Subprofessional/Technical	-5.83 (-5.23)	-1.93 (-.63)
Law Enforcement	-1.62 (-.80)	-26.12 (-6.99)
Supervisory Law Enforcement	3.98 (.70)	-14.65 (-3.58)
Field Representative	-1.62 (-1.09)	-8.24 (-2.58)
Supervisory Field Representative	-3.06 (-1.90)	-1.58 (-.44)
Administrative Staff	-9.95 (-8.83)	-5.34 (-1.78)
Supervisory Administrative Staff	-7.88 (-6.09)	-3.40 (-1.11)
Administrative Line	-4.92 (-2.01)	3.36 (1.03)
Janitorial/Custodial	1.70 (1.20)	— ^a
Supervisory Janitorial/Custodial	.51 (0.36)	.06 (.02)
Laborers	-7.19 (-.92)	2.89 (.51)
"Career Opportunity Development"	.05 (.03)	3.85 (.94)
<i>Main Effects</i>		
Constant	1940.08 (27.54)	1523.44 (8.33)
% female	-4.97 (-6.06)	-8.72 (-20.12)
% black	-6.95 (-7.14)	-3.73 (-1.37)
% Hispanic	-7.39 (-8.29)	-5.32 (-1.94)
% other nonwhite	-6.14 (-7.69)	-1.91 (-.70)
% black female	.34 (.22)	4.27 (2.60)
% Hispanic female	-1.60 (-.96)	6.69 (3.86)
% other nonwhite female	4.92 (3.68)	8.60 (6.12)
R ²	.89	.89

^a Reference category.

Notes: Jobs weighted in proportion to number of incumbents. T-statistics shown in parentheses. Coefficients of determination are adjusted for degrees of freedom. Analyses also control for detailed schematic (occupational) category and main effects of job type.

we cannot be sure whether it is job ambiguity *per se* that fuels ascription by sex and race, or rather the status distinction between white-collar work and other jobs. Work done disproportionately by nonwhites is devalued even in white-collar jobs that are fairly routine, but which nonetheless may depart from traditional stereotypes of menial and manual labor appropriate to nonwhites. Regrettably, our measure of occupational ambiguity is itself ambiguous. Thus, while our findings are consistent with previous research examining the ambiguity hypothesis (e.g., Auster and Drazin 1988), they are hardly definitive.

One might be tempted to explain the results in Table 8 differently. If women and nonwhites are beginning to enter administrative and supervisory occupations, then female- and minority-dominated job titles are likely to be concentrated at the bottom rungs of job ladders within those occupations, in positions requiring less experience and education. Perhaps this is why stronger associations obtain between demographic composition and pay rates within those lines of work. To explore this possibility, we replicated all the analyses reported in this paper with a subsample of 406 civil service jobs for which we had coded education and experience requirements from state job specifications (for details, see Baron and Newman 1989). The general pattern of results was unchanged. In particular, the most noteworthy contrasts in Table 8 were still evident, even after controlling for education and experience requirements, job category, and major schematic category (detailed results available on request).¹⁸ These supplementary analyses thus provide evidence against this alternative explanation.

¹⁸For instance, with the clerical category omitted, we obtained the following interactions with percent female after controlling for education and experience requirements, job category, and the first level of detail in Appendix A: supervisory clerical (10.62); supervisory professional (-13.30); professional (-12.27); subprofessional/technical (-5.04); supervisory subprofessional/technical (-9.08); administrative staff (-21.45); and supervisory administrative staff (-21.78). (Significance levels tended to be lower than in Table 8, due to collinearity and the smaller sample). Among the subsample of jobs containing information on education and experience requirements, nonwhites were scarce in a number of major occupational categories, limiting our ability to conduct comparable analyses for race. We aggregated categories (e.g., to clerical, administrative, professional/technical), again finding greater ascription in

SUMMARY AND IMPLICATIONS

We have argued that neither "the market" nor "devaluation" is an omnipresent imperative shaping the perceived worth of jobs. Accordingly, our analyses called attention to factors influencing the propensity to devalue a given job in a particular organizational setting, as well as factors affecting the likelihood that ascriptive biases will be sustained or redressed. Although sometimes equivocal, the results generally corresponded with our hypotheses. Sex and race stereotypes devalue pay most in jobs where performance criteria are vague, although given our coarse measure of job ambiguity, we could not be sure whether it is task ambiguity *per se* or the social status and perceived appropriateness of a given line of work for women and nonwhites that influences the extent of ascription. Our findings regarding unionization suggest that recent pay equity agreements negotiated between collective bargaining units and the state, aimed at eradicating gender-based pay inequities, have borne fruit (though not as much with respect to racial ascription). In a previous paper (Baron and Newman 1989), longitudinal analyses revealed another factor that reduced ascription: employment growth. Apparently an increasing prevalence of women or nonwhites within a job is most salient — and thereby most likely to taint a position, depressing its relative standing — when employment is declining.

We also found some evidence of greater ascription in older civil service job titles, suggesting that founding conditions shape jobs in the same way that they have been shown to affect other organizational structures. Notions of imprinting and inertia thus might fruitfully be extended to the study of work roles: cohorts of jobs founded during the same period might be expected to evince common features, such as shared selection and promotion criteria and similar degrees of ascription. However, the complex pattern of age effects we encountered suggests the value of further conceptual and methodological work on job cohorts. For instance, our results may have been affected by

selection processes governing whether jobs "died" or were revised, about which we lack information. Moreover, our findings suggested that the hypothesized inertia in job definitions was offset somewhat by older survivor jobs having had greater opportunities for incremental adjustments to remedy ascription.

Comparable worth proponents attribute lower pay in jobs done disproportionately by women and nonwhites to devaluation, whereas economists tend to invoke market forces. What do our findings imply for this debate? While some of our results — such as greater penalties in large "market-oriented" classifications — might suggest that the civil service simply mirrors the marketplace, other results are not so easily reconciled with this notion that state agencies only passively discriminate. Indeed, the state bureaucracy has itself acknowledged underpaying female-dominated classifications in the past (e.g., California Department of Personnel Administration 1982) and failing to mitigate market-based discrimination in pay setting even when made aware of it.¹⁹ In fact, according to the U.S. District Court (1987, pp. 9-10), the very notion of a market wage is not relevant to many civil service positions. Furthermore, our models included very detailed controls for occupational distinctions (and for educational and experience requirements of jobs in the supplemental analyses), which should capture differences in labor market conditions governing pay determination. Finally, while theories of "oversupply" might predict the larger gender penalties we found in large, non-idiosyncratic titles, such theories seem less germane to racial ascription, which was equally pervasive in those same titles. On balance, then, our findings suggest that observed relationships between demographic composition and prescribed pay rates cannot be traced solely to inexorable market forces confronting state government agencies. Bridges and Nelson (forthcoming) recently reached the same conclusion in analyzing the Washington state civil service.

In fact, the very distinction between market and political determinants of wage rates may itself be specious (Kerr 1957). How positions

law enforcement, administrative, field representative, and professional/technical positions, net of education and experience requirements. Controlling for major industry category tended to reduce these racial penalties (except in the case of law enforcement) by about half.

¹⁹ For instance, a 1975 SPB memo acknowledged that some firms included in civil service salary surveys had been found by courts to engage in sex discrimination, yet the state did not eliminate those firms from subsequent surveys (U.S. District Court 1987, pp. 5-6).

and their relevant markets are defined is often greatly influenced by organizational politics and social custom. For instance, Bridges and Nelson (forthcoming) report that within the Washington state civil service, gender stereotypes have affected the selection of "benchmark" jobs for which market comparisons are performed, how specific job titles get indexed to a particular benchmark classification, and how a given job's pay is adjusted in relation to the benchmark title's pay. Therefore, examining the organizational context of wage determination is critical, not simply because organizations mediate — and sometimes depart from — market forces, but also because organizational policies and practices often help *define* the relevant "market" in the first place.

Accordingly, we have examined variations across jobs in the extent of ascription, not simply to obtain more refined estimates of pay disparities by sex and race, but also to hazard some inferences about how cognitive, economic, political, and historical forces influence organizational decision-making concerning rewards. A common thread connects the variables that we have found to reduce ascription: they increase the potential for collective action by disadvantaged groups or they lower the organizational costs (or increase the benefits) of eliminating ascriptive reward allocations. For instance, the entry of women and nonwhites produces less devaluation in growing jobs, where the "pie" presumably is expanding enough to reduce the perceived threat by those favoring the status quo. We also found more ascription in large generic titles, in high-status jobs having vague performance criteria, and in jobs unprotected by activist unions. We contend that these are settings in which it is either harder for victims of ascription to mobilize and document their worth, less critical for organizations to price jobs fairly (due to fewer investments in specific human capital), or more costly (economically and politically) to do so.

In short, we identified some characteristics of jobs — their idiosyncrasy, task ambiguity, and age — that increase the tendency toward ascription by organizational decision-makers in judging job worth. Yet even if psychological propensities toward bias are greater in certain settings, countervailing economic and political interests often work to make observed penalties less severe in those very same settings. As Tetlock (1985) has noted, much of the recent psychological literature on stereotyping and

cognitive distortions is insensitive to organizational arrangements which, by making actors accountable and affecting their perceived interests, can reduce judgmental biases. If "devaluation" is to be more than an indiscriminate label, our theories must become more specific about factors affecting propensities toward ascription and actors' abilities to indulge their misconceptions.

We obviously have not specified all of these factors in this study, leaving ample room for improvement in future research. We suggested that internal politics and inertia may constrain progress toward pay equity in large bureaucracies. The amount of pressure for or against pay equity presumably depends in large part on how workers make comparisons within and between job categories and social groups, a process about which we know surprisingly little outside the laboratory. More research is needed to examine the evolution of organizational categories and why workers treat particular categories as salient in evaluating issues like the fairness of pay rates (Webster 1984, pp. 88-91; Major and Forcey 1985; Lansberg 1989; Simpson 1989).

Ascription obviously affects jobs done by women and nonwhites in other important ways that we have not examined, including diminished opportunities for pay advancement, promotions, returns to human capital, and being hired at a salary above the prescribed minimum. The extent of such disadvantages — and how they vary across organizations, time, and types of work roles — deserves future study. Research along these lines should improve our understanding of how organizations generate inequality and how to make them more equitable.

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Appendix. Sample of California Civil Service Schematic
Arrangement of Job Classes

I. CUSTODIAN AND DOMESTIC SERVICES

A. CUSTODIAL AND PROTECTIVE

1. Protective services
2. Janitorial and elevator operation

B. PERSONNEL SERVICE

C. LAUNDRY SERVICE

D. FOOD SERVICES

1. Food management
2. Food preparation and service

II. REGULATORY AND PUBLIC SAFETY

A. POLICE AND LAW ENFORCEMENT

1. Highway patrol
2. Fish and game
3. State police

B. CRIMINAL IDENTIFICATION AND INVESTIGATION

1. Administration
2. Fingerprints
3. Criminalists
4. Polygraph
5. Law enforcement consultant

C. SPECIAL INVESTIGATOR

D. FIELD REPRESENTATION

1. Collection and tax administration
2. Real estate

E. INSPECTION

1. Regulation of business and professional activities
2. Public health and safety

Note: The state civil service classification system groups the jobs analyzed in this paper into 13 categories at the first level of detail (shown in large capital letters), 99 categories at the second level of detail (shown in small capitals), and 281 categories at the most detailed level (shown in upper and lower case).

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WORKER INTERDEPENDENCE AND OUTPUT: THE HAWTHORNE STUDIES REEVALUATED*

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Recent work has called into question the "human relations" interpretation of the evidence from the classic Hawthorne studies, arguing that external factors suffice to explain the variation in workers' output found at the Hawthorne plant. In contrast, this paper demonstrates that, allowing for a wide range of other factors mediated by the social interactions in the working group, workers' productivity levels in the Hawthorne plant were indeed interdependent. Using five years of weekly data from the original Hawthorne studies, a structural model of worker productivity is estimated. This model allows for interdependence of workers' output levels, while recognizing that, although mediated by small group interactions, external and experimental variables can also play a role. The results reveal the joint importance of external factors and worker interaction in affecting the level and variability of output. The human relations approach to industrial sociology is not controverted by the original Hawthorne data from which it began.

The Hawthorne studies of the late 1920s and early 1930s have had widespread influence in industrial sociology and provide the foundation for the sub-fields of human relations, organizational development and organizational design (Roethlisberger and Dickson 1939; Whitehead 1938; Homans 1951). Beginning with what in retrospect appear to be naive attempts to relate worker productivity to the intensity of illumination in the Hawthorne plant of Western Electric, the studies elaborated the role of social interaction in the determination of work effort and output levels. The increasing complexity of such interactions that the Hawthorne researchers found and explored—first in the Illumination and the Relay Room experiments, later in the Mica Splitting Test Room and the Bank Wiring Observation Room—changed many ways of thinking about the labor process and, whatever the current status of the Hawthorne studies themselves, altered forever the landscape of industrial sociology. Major works

of appraisal include Landsberger (1958), Dickson and Roethlisberger (1966), Carey (1967), and Cass and Zimmer (1975).

In important recent work, Franke and Kaul (1978) re-examined the evidence collected at the Hawthorne plant, particularly the data from the "Relay Assembly Test Room." Using the original sources to construct data series for individual worker output levels and related variables, they conducted a statistical analysis of the determinants of the quantity of output over the five-year study period. Whereas the original Hawthorne researchers had found striking evidence for the interdependence of work patterns in small industrial groups, Franke and Kaul's principal finding was that experimental control variables, together with external factors such as impending economic adversity and raw materials problems, could explain almost all of the recorded variation in output, thereby "obviating the need to draw upon less clearly definable human relations mechanisms" (p. 623). These conclusions gave rise to a lively debate (Wardwell 1979; Franke 1979, 1980; Schlaifer 1980) on their statistical procedures. Questions were also raised about the original interpretation of variables such as "managerial discipline" (the replacement of two workers by two others early on in the Relay Room study) and "economic depression" (a dichotomous variable representing the onset of the great Depression). Overall, while this debate generated some refinements—both in the statistical analysis

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and, more importantly, by the use of weekly output data, rather than averages over experimental periods of varying length—it is unclear that the central issues were resolved.

In the work of Franke and Kaul, an opposition is established between human relations issues on the one hand and external and experimental factors on the other. This opposition has, implicitly, also been accepted by their critics. I argue, however, that most of this debate was misplaced and that this alleged opposition is false. Rather, it is necessary to treat the various experimental and external changes *within* a framework of potentially interdependent effort and output decisions by the workers. In this way, one can test for the worker interdependence that was a central finding of the original Hawthorne research. This approach recognizes the role of external factors in affecting worker decisions but insists that these factors be understood as mediated through small group interaction. That is, the presence of small group interaction alters worker responses to environmental change, and is critical for understanding the dependence of output upon these environmental factors, the issue with which the Hawthorne studies began. There is also inherent interest in understanding the nature of within-group social interaction and its effects on levels of effort and output; this in fact became the focus of the Hawthorne studies in their later years.

The goal of this paper, then, is to study the interdependence among worker output levels as recorded in the Relay Assembly Test Room during the 1927-1932 period. Building on the pathbreaking work of Franke and Kaul (1978) and Franke (1980), I use their weekly data and supplement their various experimental and external factors with several other relevant data series extracted from Whitehead's (1938) painstaking empirical study.

THE STUDY OF THE INTERDEPENDENCE OF WORKER OUTPUT LEVELS

I begin by expositing a simple model of the determinants of worker output levels in which $q_i(t)$ denotes the output level of worker i in period t and $i = 1, 2, \dots, N$ indexes workers in a group of size N . Let $Z(t)$ represent those variables that, in period t , are common to all workers in the group; this includes both external variables, such as economic conditions outside the workplace, as well as internal (potentially experimental) variables such as the quality of raw

materials, the pay and incentive schemes common to all group members, and variation in scheduled rest stops. Further, let $X_i(t)$ denote other variables that are specific to worker i in period t , examples being (idiosyncratic) voluntary rest time or a dichotomous (dummy) representation of whether or not that worker was recorded as sick.

Specifically, I take $N = 5$, as in the Relay Assembly Room, and focus on the output of worker 1, $q_1(t)$. Suppose that during a given time period, worker 1 gradually adjusts her output toward a personal target level, denoted as $q_1^*(t)$. That is,

$$q_1(t) - q_1(t-1) = \lambda_1 [q_1^*(t) - q_1(t-1)] \quad (1)$$

where $q_1(t-1)$ is the actual output level of worker 1 recorded in the preceding period, $t-1$, and λ_1 is the degree to which worker 1 closes a gap between her target and the previous period's output. Rearranging equation (1) yields

$$q_1(t) = (1 - \lambda_1) q_1(t-1) + \lambda_1 q_1^*(t) \quad (2)$$

so that current output of worker 1 is just a weighted average of her output level in the preceding period and the target output level, with the relative weights depending on the speed of adjustment, λ_1 . This partial adjustment framework is a natural way of thinking about patterns and habits of work that alter slowly over time, where the response to some environmental change can be greater as a worker becomes adapted to it (see Nerlove 1956; Judge, Griffiths, Hill, Lüdtkephol, and Lee 1985, chapter 10).

The target output level $q_1^*(t)$ itself is assumed to be determined by three sets of factors: the variables common to all workers, $Z(t)$; the variables specific to worker 1, $X_1(t)$; and the output levels of the other members of the work group, $q_2(t), \dots, q_5(t)$. In addition, this target equation may contain a person-specific error term, $u_1(t)$, which is assumed to be serially independent. The target equation is hence

$$\begin{aligned} q_1^*(t) = & a_1 + b_1 Z(t) + c_1 X_1(t) + \\ & \alpha_{12} q_2(t) + \alpha_{13} q_3(t) + \\ & \alpha_{14} q_4(t) + \alpha_{15} q_5(t) + u_1(t) \end{aligned} \quad (3)$$

where a_1 is an intercept, b_1 and c_1 are slope coefficients for the common variables and worker-specific variables respectively, and α_{12} ,

..., α_{15} , are slope coefficients for the dependence of worker 1's target output on other workers' output levels. This potential interdependence of worker output levels is the novel statistical feature of this paper. Such interdependence may arise for the sociological reasons discussed by the early Hawthorne researchers, or for other more strategic reasons such as those associated with the nature of particular pay and incentive schemes (e.g. Mathewson 1931; Roy 1952). Interdependence may also arise for technological reasons, as on a production line where workers' output levels are necessarily interdependent, although this type of interdependence was not in fact present in the Relay Assembly Room. For a specific model of interdependence in a similar framework to that used here, see Jones (1984).

Using equation 3 in equation 2, one can eliminate the target variable $q_1^*(t)$ and express the current output level of worker 1 in period t as depending upon her own past output level, the sets of Z and X_i variables, and the current output levels of the other members of the working group:

$$q_1(t) = (1-\lambda_1) q_1(t-1) + \lambda_1 [a_1 + b_1 Z(t) + c_1 X_1(t) + \alpha_{12} q_2(t) + \alpha_{13} q_3(t) + \alpha_{14} q_4(t) + \alpha_{15} q_5(t)] + \lambda_1 u_1(t) \quad (4)$$

The general case of equation 4 (which gives the equations for each of the other four group members) can be specified as

$$q_i(t) = (1-\lambda_i) q_i(t-1) + \lambda_i [a_i + b_i Z(t) + c_i X_i(t) + \alpha_{i1} q_1(t) + \alpha_{i2} q_2(t) + \alpha_{i3} q_3(t) + \alpha_{i4} q_4(t) + \alpha_{i5} q_5(t)] + \lambda_i u_i(t) \quad (5)$$

for $i = 1, 2, \dots, 5$, where α_{ij} is a vector of coefficients corresponding to the output levels of group members other than worker i , here denoted $q_j(t)$. Equation 5 is the basis for statistical modelling of the interdependence of output levels below.¹ The error terms, $u_i(t)$, are each serially independent, as assumed above, but there may be contemporaneous correlation across these equations; this will be a factor when system estimates are presented below.

It is clear from equation 5 that the issue of intertwined cause and effect is potentially present here. A single equation, such as equation 5, does not permit determination of the independent effect of, say, $q_2(t)$ upon $q_1(t)$ as distinct from the reverse and simultaneous effect that $q_1(t)$ may have upon $q_2(t)$. This cause and effect problem may in part explain why no one has heretofore addressed the central conclusion of the Hawthorne study statistically.

However, simple procedures are available to obtain consistent estimates of parameters such as these, provided suitable "instrumental variables" can be found. The problem of identifying cause and effect is that all output levels are determined simultaneously, according to equation 5. To identify the coefficient on worker 2's output, $q_2(t)$, in the equation determining the output of worker 1, $q_1(t)$, one needs to discover a variable that affects worker 2's output *without* also directly affecting the output of worker 1. Variation in this factor will then cause worker 2's output to alter for a reason not caused by variation in 1's output and the resulting changes in the output of worker 2, $q_2(t)$, will affect worker 1's output, $q_1(t)$, in a way that can be estimated. Such a variable is said to be *excluded* from the equation determining the output of worker 1, here equation 4 above, and constitutes an *instrumental variable* for worker 2's output in the equation for worker 1. This idea generalizes readily to any number of equations, provided that in each case instrumental variables can be found that are legitimately excluded from the equation of interest.

In the present case, there are two ready sets of candidate instruments. First, the *past* output level of a worker affects that worker's *current* output decision but is not itself affected by other workers' *current* output levels; thus, $q_2(t-1)$ can be an instrument for $q_2(t)$ in the equation for worker 1, and so on. Second, the person-specific variables, $X_i(t)$, for example, affect $q_i(t)$ but do not have any direct influence upon $q_j(t)$, according to equations 4 and 5, and can therefore also serve as instruments.

DATA AND METHOD

Data to be analyzed are drawn from weekly records collected from April, 1927 to June, 1932 at the Hawthorne plant of Western Electric. In the Relay Assembly Test Room, the focus of the present study, five women worked, in a technologically independent way, producing electrical

¹ Case, Hines, and Rosen (1989) is a model (of interdependent spending decisions by state legislatures in the US) that has a similar statistical structure.

relays. Detailed descriptions of the backgrounds of these workers, the physical conditions in the room, the technology and various incidents that occurred during the study may be found in Roethlisberger and Dickson (1939, especially Chapters II-VIII) and Whitehead (1938). The process of selecting workers for the study does not seem to have been systematic (Whitehead calls it "quite informal and somewhat obscure" (1938, Volume I, p. 14)), except that some experience in this line of work was expected, and that the workers were all volunteers. Further, "they were expressly cautioned to work at a comfortable pace, and under no circumstances to try and make a race out of the test," according to the words of the Relay Room superintendent (Whitehead 1938, Volume I, p. 104).

The five women who worked in the relay room for most of the study period were quite young. Workers 1-4 were between 20 and 22 years of age at the start of 1930 and worker 5 was 31 (Whitehead 1938, Volume I, Table II, p. 16). Workers 1-4 had been born in the United States, worker 2 being of Italian extraction and workers 1, 3 and 4 being of Polish origin. Worker 5 had immigrated to the U.S. from Norway at age 25 and was the only married member of the group. All of the women had prior experience assembling relays, as noted above, but the extent of this varied from worker 5 with only 13 months experience to worker 2 at 47 months. The differing personality characteristics of the five women are best summarized by Roethlisberger and Dickson: "the docile submission of Operator 1, the restless impatience of Operator 2, the moodiness of Operator 3, the sturdy independence of Operator 4, and the aloofness of Operator 5" (1939, pp. 170-71).

Output figures employed are the weekly average number of relays produced per hour per worker.² These data are taken from Franke (1980, Appendix 1) and are preferable to the averages

across experimental periods of varying length that were used in his 1978 and 1979 statistical analyses. Also available are individual data on machine repair time and voluntary rest time, measured in minutes per day. Both of these series are based on experimental period averages (Franke and Kaul 1978, Appendix 2), coded here as the relevant weekly average within an experimental period. These data are supplemented by a set of dichotomous variables representing whether or not each worker reported having felt ill while at work during the week in question. These data were constructed from tables in Whitehead (1938, Volume I, Chapter 7) and are based on worker retrospection during regular medical check-ups administered to the women. It is noted by Whitehead that the doctor's reports do not give this information after December 1930 and give it only once for all of 1927. Accordingly, these individual-specific dummy variables are supplemented by a dichotomous variable that represents whether or not the doctor was reporting such events at the time, and it is assumed that s/he was not doing so in 1927 and for all of 1931 and 1932.

In addition, a set of variables, *Z*, that affect all workers' output levels is included. This set includes a weekly series of days worked per week (Franke 1980, Appendix 1) and a measure of "raw materials problems" (Franke and Kaul 1980, Appendix 1). This latter source also provides data on scheduled rest time, measured in minutes per day, a variable that was changed as part of the experimental design in the Relay Room (see Roethlisberger and Dickson 1939, Chapter III). Allowance is made for incomplete data by including a dummy variable denoting weeks when the data on scheduled rest stops were missing. Finally, there is a dummy variable describing the pay and incentive system in operation in the Relay Assembly Room. For the period under study, payment was based on a "group piece rate," whereby a rate was applied to the output of the group as a whole (with allowance for "carrying" the layout operator); this total group remuneration was then distributed among the group members according to each worker's "individual rating" which depended on assessed skill and length of service (Whitehead 1938, Volume I, p. 17). In the first seven weeks of the 270 week study, the piece rate was applied to the output of a group with over 100 members, but thereafter the rate was applied to the output of the small group in the Relay Assembly Room itself (Roethlisberger

² In fact, the women produced over 200 different types of relays, although in many cases the differences among types were slight (Whitehead, 1938, Volume I, p. 18). For present purposes, the data employed follow the Western Electric Company's own practice, used for its pay system, of converting the outputs of various types of relays into the output of a standard relay. Detailed discussion of the potential biases this might introduce is presented in Whitehead (1938, Volume I, Chapter 9), where it is concluded that changing relay types had essentially no effect on the overall output of experienced employees.

and Dickson, 1939, p. 34).³ A dummy variable represents this change; it was labelled "X15" and termed "Small Group Incentive" in Franke and Kaul (1978) and the debate cited above.

The U.S. national unemployment rate in each year of the study (U.S. Bureau of the Census 1975, part 1, p.135) is used as a better measure of changing external economic conditions than the "economic depression" dummy variable employed in earlier work.⁴ A dichotomous variable represents weeks in which the usual seating arrangement in the relay room was changed (Whitehead 1938, Volume I, p. 147 ff.), which happened during a ten month period starting in April, 1930. Lastly, two dummy variables are included that take the value 1 if the *Chicago Tribune* reported a heat wave or a cold wave in the week in question (Whitehead 1938, Volume I, Appendix). Whitehead suggests that, while heating arrangements were adequate, so that external cold temperatures did not lead to unusually cold conditions within the relay assembly room, very hot and humid weather led to a worsening of working conditions in some weeks during the summers.

While the principal source of variation in these variables during the early part of study period was conscious experimentation, for most of the period the changes that can be exploited statistically are better characterized as expedient responses to the onset of the Depression (Whitehead 1938, Volume I, p. 38). Research attention in the later years was focused on other aspects of the Hawthorne studies, such as the Bank Wiring Observation Room, and the changes present in the data (e.g., Saturday mornings off, a 4:15pm end to the working day) were as much the result of changing conditions as of explicit design.

Finally, it is important to remember that the composition of the Relay Assembly Room working group changed during the 270 weeks

under study. After week 39, workers 1A and 2A were permanently replaced by workers 1 and 2. Also, during weeks 120 to 160, and from week 255 to the end of the study, worker 5 was replaced by worker 5A. Workers 3 and 4 were present in the Relay Room for the whole study period, except for vacations and minor short-term absences.⁵ To deal with the issue of changing composition, two methods of analysis are employed.

First, I estimate a model of the determination of output for each worker separately using only those weeks when the worker in question was actually in the Relay Room; this leads to varying sample sizes, of course, reflecting the differences in the number of weeks that the five workers were in fact present.⁶ To accommodate the personnel changes, which provide one natural experiment for the interdependent output model, dummy variables representing the personnel change and interaction terms of these dummy variables with the output levels of workers 1/1A, 2/2A and 5/5A are included in the equations for the outputs of the other workers. This allows for both a change in the intercept and a change in the (slope) interdependence coefficient whenever the group composition changes, and is preferable to a simple shift dummy variable (as used by Franke and Kaul, 1978, for example) in that it allows changing interdependence effects (Maddala 1977, Chapter 9). Second, as an alternative procedure, I restrict attention to those periods when the five members of the core group (workers 1, 2, 3, 4 and 5) were present, thereby removing all complications of changing group composition. With the adjustment for lagged output variables, this yields a consistent sample size of 159 weekly observations.

⁵ Omitted from the sample are all weeks in which any worker lacked either a valid output figure or a valid output figure for the preceding week. This leads to the omission of the six synchronized vacation periods during the time of the study, as well as a small number of other weeks when one or more of the workers was absent.

⁶ The key point is simply that, to model the behavior of, say, worker 5, only worker 5's behavior should be analyzed, and not that of her replacement 5A. This was apparently not appreciated by Franke (1980), however, where "individual" models of output are estimated using composite data of precisely this type. As a consequence, the interpretation of results for "individuals" 1A + 1, 2A + 2, and 5 + 5A in his Tables 4, 5, and 6 is highly problematic.

³ According to the contemporary accounts, the workers valued the insurance aspect of the group remuneration and tended to dislike the lack of work incentives in the large group case (Whitehead, 1938, Volume I, p.133). The change to a smaller group for payment purposes was welcomed by the group members, with the latter incentive effect being improved while the mutual insurance motive was still, in their minds, met (Whitehead, 1938, Volume I, p.255).

⁴ It is worth noting that the Relay Assembly Room study ended in 1932 with the five workers being laid off as a direct result of the Depression.

Table 1. Summary Statistics for all Variables: Five Workers in the Relay Assembly Room, 1927-1932

Variable	Mean	Standard Deviation	Range	
			Minimum	Maximum
Output of 1/1A	67.19	7.17	46.40	80.00
Output of 2/2A	70.46	8.36	45.60	82.40
Output of 3	63.45	4.33	43.70	72.90
Output of 4	67.54	6.77	48.10	82.40
Output of 5/5A	59.20	5.72	43.40	69.40
Repair time of 1/1A	27.51	14.01	.00	59.90
Repair time of 2/2A	22.79	10.67	.00	42.70
Repair time of 3	20.34	11.38	.00	40.70
Repair time of 4	11.79	7.68	.00	30.00
Repair time of 5/5A	23.29	18.96	.00	69.00
Voluntary rest of 1/1A	5.31	3.77	.00	15.00
Voluntary rest of 2/2A	7.16	4.31	.00	20.60
Voluntary rest of 3	6.23	3.05	.00	13.00
Voluntary rest of 4	7.42	3.80	.00	16.50
Voluntary rest of 5/5A	5.48	2.08	.00	8.90
Worker 1 ill	.08	.27	0	1
Worker 2 ill	.06	.24	0	1
Worker 3 ill	.06	.24	0	1
Worker 4 ill	.05	.22	0	1
Worker 5/5A ill	.03	.16	0	1
Scheduled rest time	21.46	8.80	.00	30.00
Days per week	5.03	.58	3.00	5.50
Raw materials problems	.15	.36	0	1
Seating change	.17	.38	0	1
Unemployment rate	8.40	6.18	3.20	23.60
Heat wave	.04	.20	0	1
Cold wave	.04	.19	0	1
Small group pay	.97	.16	0	1
1A & 2A replacement	.13	.33	0	1
5A replacement	.21	.41	0	1
No medical reports	.38	.49	0	1
No scheduled rest stop reports	.04	.20	0	1

Notes: N = 239. The sample omits the 31 weeks in which at least one of the workers was absent from the work group or had been absent the preceding week.

Table 1 contains summary information on all variables used in the analysis, excluding those periods (mostly annual vacations) when at least one of the workers was absent from the relay room or had been absent during the preceding week.

ESTIMATES OF THE INTERDEPENDENCE OF WORKER OUTPUT LEVELS

Individual Equation Estimates using Varying Sample Periods

I have estimated equation 5 for each worker using both ordinary least squares and two-stage

least squares, the latter procedure allowing for the potential endogeneity of other workers' output levels. For both procedures, all weeks in which the worker concerned was present are used, and interaction variables are included that are the workers' output levels multiplied by a dummy variable representing the replacement. This allows the slope coefficient—which shows how worker *i*'s output affects the output of worker *j*—to vary as workers are replaced. In addition, I use a standard additive dummy variable that allows the intercept of the equation to be affected by the replacement. Since the "cause and effect" problem mentioned above is likely important, I report only the two-stage least

Table 2. Two-Stage Least Squares Results for the Relationship Between Worker Output and Selected Variables

Variable	Output of Worker				
	1	2	3	4	5
Own lagged output	.14* (.06)	.22** (.06)	.00 (.05)	.10* (.04)	.18** (.04)
Output of 1/1A	—	.48** (.12)	.33 (.23)	-.33 (.25)	.04 (.23)
Output of 2/2A	.53** (.16)	—	-.31 (.22)	.56** (.18)	.44* (.19)
Output of 3	.09 (.24)	-.44* (.19)	—	.72** (.19)	-.09 (.30)
Output of 4	-.03 (.21)	.38* (.16)	.64** (.18)	—	.10 (.21)
Output of 5/5A	.16 (.13)	.18 (.13)	-.20 (.15)	.24 (.18)	—
Worker 1 interaction	—	—	-.38 (.35)	.31 (.38)	.12 (.35)
Worker 2 interaction	—	—	.41 (.29)	-.54 (.33)	-.07 (.32)
Worker 5 interaction	-.07 (.14)	-.08 (.14)	.13 (.23)	-.34* (.17)	—
Repair time of i	.04* (.02)	-.04 (.03)	-.05† (.03)	.02 (.04)	.03 (.04)
Voluntary rest of i	-.19 (.18)	.30* (.13)	.02 (.08)	-.06 (.09)	-.20 (.16)
Worker i ill	.36 (.48)	-.16 (.50)	-.93 (.58)	.53 (.74)	-.74 (.91)
Scheduled rest time	-.10 (.11)	.22** (.07)	.07† (.04)	-.02 (.05)	-.07 (.06)
Days per week	.44 (.41)	.61 (.39)	-.09 (.43)	.51 (.48)	-1.51** (.44)
Raw materials problems	-1.19 (1.22)	1.75 (1.19)	-1.95 (1.28)	2.17* (1.28)	-4.46* (2.41)
Seating change	-2.05* (.83)	2.88** (.91)	-.51 (.90)	1.22 (.98)	-1.81† (1.04)
Unemployment rate	.28** (.09)	-.13 (.10)	.13 (.12)	-.00 (.14)	.24* (.13)
Heat wave	-.93 (.70)	.59 (.66)	.09 (.74)	-.52 (.84)	-.69 (.76)
Cold wave	1.58† (.87)	-2.79** (.69)	-1.53† (.81)	1.65† (.89)	.52 (.98)
Small group pay	—	—	3.51* (1.48)	-1.35 (1.83)	.99 (2.30)
1A & 2A replacement	—	—	-2.56 (14.19)	14.87 (12.74)	1.15 (14.51)
5/5A replacement	5.11 (8.46)	5.78 (8.16)	-6.61 (13.95)	19.02* (10.29)	—
Constant	5.03 (9.57)	4.00 (9.19)	27.17** (7.09)	-17.14 (10.54)	22.44* (11.31)
R ²	.84	.89	.82	.90	.88
s.e.e.	1.85	1.72	1.94	2.33	2.01
d.f.	189	189	216	216	168
Wald $\chi^2(4)$	26.34**	67.56**	32.17**	79.00**	41.55**
Hausman $\chi^2(4)$	3.53	4.98	6.81	2.87	12.05**

† $p < .10$ * $p < .05$ ** $p < .01$

Notes: Values in parentheses are standard errors. Control variables included in the estimating equations but whose coefficients are not shown are "No Medical Reports" and "No Report on Scheduled Rest Stops." The Wald χ^2 statistic tests the hypothesis that all other workers' output levels jointly be excluded from the equation. The Hausman χ^2 statistic tests the hypothesis that all other workers' output levels are exogenous, given the set of instrumental variables being used.

squares results in Table 2, the ordinary least squares results being available in the working paper version (Jones 1989, Table 2).

For all of workers except worker 3, the lagged own output variable has a significant and positive coefficient, with the significant point estimates implying that between 78 and 90 percent of the gap between target and actual output is made up in one week. In every case, a Wald test of the joint exclusion of the four other contemporaneous output levels strongly rejects that hypothesis. The most striking features of the pattern of coefficient estimates for the interdependence variables are the relative unimportance of worker 5 in determining the other workers' output levels and the near-symmetry of the estimated effects in many other cases: about equal positive effects are seen between workers 1 and 2, 2 and 4, and 3 and 4, while workers 2 and 3 have similar negative effects on one another.

The external and experimental variables have a moderate but significant role to play. The unemployment rate has a positive effect for worker 1 and, less convincingly, for worker 5, but has insignificant coefficients for workers 2, 3 and 4 (though the coefficient for worker 2 is significantly negative in the ordinary least squares case). These findings stand in contrast to the central role of the "economic depression" dummy variable used by Franke and Kaul, the discrepancy being probably explained by the broader set of other factors used here and by the fact that the unemployment rate is a better measure of a changing economic climate than the step variable used in the earlier work. Similarly, the seating change variable and the indicator of extremely cold weather are sometimes significant, but with conflicting signs.⁷ The various person-specific controls, especially repair time and voluntary rest time, are important for some workers, although again the pattern of the signs of the coefficients is mixed. The worker replacement interaction terms and the additive dummy variables representing the various personnel changes are mostly unimportant. Only the temporary replacement of worker 5 by worker 5A has any role to play and even then these coefficients are only significant for worker 4. Finally, I note that although there are some

⁷ Note that only worker 2, of Italian extraction, was negatively affected by extreme cold weather, according to these results, while the workers of Polish origin (workers 1, 3 and 4) and the worker from Norway (worker 5) were comparatively unaffected.

differences between the Table 2 results and the ordinary least squares estimates reported in Jones (1989, Table 2), these differences are mostly not striking. A formal Hausman (1978) test of the exogeneity of the other workers' output levels, based on the validity of the chosen set of instruments, leads to rejection of the null hypothesis of exogeneity only for worker 5.

Estimates using a Consistent Sample Period

I now address the estimates using *only* weeks in which all five main group members were present. This avoids the issue of whether the introduction of a replacement worker altered the interactions between other group members. Using this consistent sample of 159 weekly observations, the five equations can be estimated jointly and I can thereby test various *joint* hypotheses ("cross-equation restrictions") about the patterns of worker interdependencies.⁸ Since the focus is on the interdependence of worker output levels, only these results are henceforth reported (the complete set of coefficient estimates and standard errors for the other variables is available upon request). Also, since the equation by equation results using the consistent sample largely replicate the results of Table 2, they are relegated to the working paper version (Jones 1989, Appendix).

Table 3 reports three-stage least squares estimates for the unconstrained system; overall, these are broadly comparable to the two-stage least squares figures in Table 2 (and in Jones 1989, Appendix). This procedure exploits the potential overidentification of the system when both lagged output and person-specific instrumental variables are used and leads to greater efficiency when the error terms in the constituent equations are correlated (Maddala 1977, pp. 482-86).⁹ The lagged dependent variable effects are somewhat similar, although the point estimates are generally smaller than previously. Worker 2 has a coefficient on her own lagged

⁸ Since there are no longer group composition changes, the interaction variables that represented these changes are omitted. The seating change variable is also excluded, since this was associated with worker 5 being temporarily replaced by worker 5A.

⁹ A Breusch-Pagan test that the variance-covariance matrix is diagonal yields a $\chi^2(10)$ statistic of 234.43, a very strong rejection of this hypothesis. This suggests that the three-stage least squares estimates are more efficient than the earlier figures that came from estimating each equation separately.

Table 3. Three-Stage Least Squares Estimates of the Interdependence of Worker Output Levels

Variable	Output of Worker				
	1	2	3	4	5
Own lagged output	.10 (.07)	.08 [†] (.05)	.18 [*] (.08)	-.00 (.04)	.48 ^{**} (.07)
Output of 1	—	.64 ^{**} (.13)	.30 [*] (.13)	-.78 ^{**} (.18)	.12 (.15)
Output of 2	.61 ^{**} (.15)	—	-.35 ^{**} (.12)	.98 ^{**} (.10)	.32 [*] (.14)
Output of 3	.84 ^{**} (.25)	-.84 ^{**} (.17)	—	1.01 ^{**} (.19)	.19 (.23)
Output of 4	-.69 ^{**} (.20)	.89 ^{**} (.09)	.60 ^{**} (.11)	—	-.16 (.18)
Output of 5	.18 (.13)	.00 (.12)	-.11 (.10)	.07 (.15)	—
$\chi^2(4)$ tests of restrictions that:					
No one affects worker 1		31.31 ^{**}			
No one affects worker 2		237.35 ^{**}			
No one affects worker 3		35.34 ^{**}			
No one affects worker 4		218.75 ^{**}			
No one affects worker 5		25.13 ^{**}			
No one is affected by worker 1		29.22 ^{**}			
No one is affected by worker 2		107.13 ^{**}			
No one is affected by worker 3		34.96 ^{**}			
No one is affected by worker 4		137.70 ^{**}			
No one is affected by worker 5		3.46			
$\chi^2(20)$ joint exclusion test:		734.41 ^{**}			

[†] $p < .10$ * $p < .05$ ** $p < .01$

Notes: Values in parentheses are standard errors. Estimates are based on the consistent sample of 159 weeks. Control variables included in the estimating equations but whose coefficients are not shown are "No Medical Reports" and "No Report on Scheduled Rest Stops," repair time, voluntary rest time, a dummy variable indicating whether or not worker i was ill, scheduled rest time, days per week, raw materials problems, the unemployment rate, and heat wave and cold wave. The $\chi^2(20)$ statistic tests the hypothesis that all other output variables jointly be excluded from the system of equations.

output variable that is small and significant only at the 10 percent level, while the coefficient on own lagged output is not significantly different from zero for workers 1 and 4. Of the interdependence coefficients themselves, many are now strongly significant, with positive effects between workers 1 and 2, and 2 and 4, and with negative effects between workers 1 and 4, and 2 and 3.

Two particular sets of hypotheses are tested and the associated $\chi^2(4)$ statistics are reported: that no other worker affects worker i ; and that no other worker is affected by worker i . In the earlier terminology, these tests are respectively that $\alpha_{ij} = 0$ and $\alpha_{ji} = 0$ (for all j not equal to i); this amounts to testing respectively that the last four

elements in each column and the last five rows of the upper panel of Table 3 are zero. In every case, the hypothesis that no one affects worker i is rejected, while in every case but one, the data similarly reject the null hypothesis that no other worker is affected by worker i . The exception is worker 5, for whom the data only reject the null that she affects no one with a p value that just exceeds one half. The joint hypothesis that all of these coefficients are zero, tested by the $\chi^2(20)$ statistic, is strongly rejected. Data from the Relay Assembly Room decisively reject the position that social interactions have no role to play, even when a large set of external and experimental control variables are included.

Finally, several sets of cross-equation restric-

tions were tested for these data in an attempt to encapsulate the findings of Table 3 in a simple representation. Four particular types of constraints were employed: (1) symmetry, that the effect worker i has on worker j 's output is the same as the effect that worker j has on the output of worker i : i.e., $\alpha_{ij} = \alpha_{ji}$; (2) the restriction that worker 2 is a leader and worker 1 a follower, as suggested by Roethlisberger and Dickson (1939, p. 167-68), so that $\alpha_{j1} = 0$ and $\alpha_{2j} = 0$; (3) the restriction that all other workers have equal effects on each particular worker, so that, for each worker i , $\alpha_{ij} = \alpha_{ik}$,¹⁰ and (4) the restriction that all equations share a common lag structure, so that $\lambda_i = \lambda_j$ for all workers i and j . However, each restriction was rejected by the data, with the least decisive rejection (that of the symmetry hypothesis) being almost exactly at the 5 percent level. The constrained system estimates and test statistics are reported in Jones (1989, Appendix).

I also investigated various "location-based" restrictions on the structure of worker interdependence, the idea being that influences might be greater between workers with neighboring positions on the workbench than, say, between workers at opposite ends. Although there is some evidence in the original accounts for this type of effect — it was apparently a factor in the decision to re-arrange the seating plan — it is hard to detect in these data. Restricting the degree of interdependence to be a plausible function of the "distance" between two workers, the various χ^2 statistics always reject the restriction overwhelmingly. In view of the fact that the room was small and that interactions involving all members of the group occurred frequently, the fact that differing personalities and attributes played a larger role than location at the workbench is not surprising.

COMPARISON OF STATISTICAL AND DESCRIPTIVE ACCOUNTS

I now address the similarities and differences between this statistical account of worker interdependence in the Relay Assembly Room and the descriptive accounts given by Whitehead and Roethlisberger and Dickson. The focus is

¹⁰ This is equivalent to entering the average output of the other group members in equation 5, instead of entering their output levels individually. This is the restriction imposed in the theoretical model proposed by Jones (1984, Chapter 3).

on the set of interdependence figures given in Table 3, those from the unconstrained system estimation. Three main findings from Table 3 can be compared with the earlier descriptions. These are (1) the relative independence of worker 5; (2) the significantly positive mutual interdependence between several pairs of workers; and (3) the two pairs of workers with a significantly negative mutual interdependence.¹¹

The isolation of worker 5 is a recurring theme in the original research. She was considerably older than the other workers, the only group member not born in the U.S. (and the only one with a foreign accent) and she was the only married woman in the group. She was "noted for her quiet deliberation, sturdy persistence, and a firm but nonaggressive pursuit of whatever she decided to accomplish" (Roethlisberger and Dickson 1939, p. 169). Moreover, she was never a member of the same sub-group as worker 2, whom the earlier sources describe as the acknowledged leader of the group (Whitehead 1938, Volume I, p. 165). She was excluded from many social gatherings outside the workplace, as when worker 2 invited all of the others to visit her home one evening (Whitehead 1938, Volume I, p. 167). In the plant itself, she regularly responded less to the exhortations of worker 2 than did the other women. These accounts are corroborated by the results in Table 3, in that worker 5 affects no-one and only worker 2's output has an effect on her.

The various positive interdependencies in Table 3, between workers 1 and 2, 2 and 4, and 3 and 4, are also largely reflected in the original accounts. Roethlisberger and Dickson note that worker 1 was subordinate to worker 2 and that when worker 1 returned to her usual place next to worker 2, after an interruption, worker 1 "immediately jumped her output by approximately 7 to 8 relays per hour, keeping in step with her new neighbor, Operator 2" (p. 168).¹²

¹¹ The descriptive accounts, while useful, should be interpreted with some caution since they are clearly incomplete and may have some systematic bias. Compared to the ideal in which the recorder presents "a reasonably balanced picture of a number of important aspects of the given situation," Whitehead himself admitted that "none of the records referring to the Test Room can be said to fall into this highest category" (Whitehead 1938, Volume 1, pp. 106-7).

¹² The immediacy of worker 1's response, according to this account, means that the associated dynamic model should display a fast speed of adjustment. From Table 3, the point value of the estimate

Whitehead notes that workers 1 and 2 became close friends (Whitehead 1938, Volume I, p. 156) and concluded that this pair, like workers 3 and 4, were "definitely intimate" (p. 165). The interdependence of workers 3 and 4 is also borne out in the statistical results, although the (admittedly mild) tendency reported by Whitehead (1938, Volume I, p. 134) of worker 3 to follow the lead of worker 4, rather than *vice versa*, is not evident in Table 3. Similarly, the strong positive interdependence found in the statistical results between workers 2 and 4 accords with the original accounts. Roethlisberger and Dickson note that these two women became increasingly friendly and went to parties together outside the plant (1939, p. 168). Likewise, Whitehead comments that "the real solidarity of the group was achieved when, at the end of 1928, Op. 4 identified herself with Op. 2 and, to some extent, carried Op. 5 with her" (1938, Volume I, p. 134). The only instance of a strong positive interdependence of output levels in the statistical results that is not in line with the descriptive material is that between workers 1 and 3. Even in this case, however, the Hawthorne accounts do not note any hostility between workers 1 and 3; in fact, when the change was made in the seating plan in April, 1930, these two workers were deliberately placed in adjacent positions at the workbench.

Two clear negative interdependencies appear in Table 3, these being between workers 1 and 4 and between workers 2 and 3.¹³ The antipathy between workers 2 and 3 reflects a common theme in the original accounts. Worker 3 had been the group leader prior to the replacement of

workers 1A and 2A by workers 1 and 2, but she apparently lost this role to worker 2 shortly into experimental period 7 (early in 1928): "there is some evidence that she felt this loss of leadership keenly and tried to disguise her disappointment by playing the role of a clown.... Most of her disputes were with Operator 2" (Roethlisberger and Dickson 1939, pp. 168-69). Indeed, the change in seating¹⁴ "removed Op. 3 from the proximity of Op. 2 and gave the latter the two assemblers who had irritated her the least" (Whitehead 1938, Volume I, p. 147). There is little in the descriptive accounts jointly concerning workers 1 and 4, for whom some negative interdependence appears in Table 3, but, as with the positive interaction between workers 1 and 3, the situation is more an absence of corroborative data than the presence of contrary evidence.

Finally, there are two instances where results from the statistical analysis are not consistent with the original Hawthorne accounts. First, worker 4 is characterized by a reciprocal pattern of leading *and* following other group members, according to the present estimates. The leadership role is present to some degree in the descriptive accounts, as when worker 3 joined with worker 4 in resisting the imperatives of newly-arrived worker 2 (Whitehead 1938, Volume I, p. 134), but a strong follower pattern

of λ_1 implies that 90 percent of the adjustment by worker 1 would be made within the first week, consistent with the verbal account.

¹³ One potential explanation for negative interdependencies, along the lines of Roy (1952), is that workers sought to restrict output to reduce the likelihood of a piece rate revision. (A clear exposition of this type of dynamic effect in a simplified model with one worker is given by Gibbons (1987).) If worker 2 raised output, for example, then perhaps worker 3 would lower her production, fearing a cut in the price per piece. The difficulties with applying this idea to the present context are threefold. First, there is a striking absence of any direct evidence from the verbal accounts that the threat of such a piece rate revision was a concern among these women, in contrast to the "canny calculators" where "the dollar sign fluttered at the masthead of every machine" in Roy's machine shop (1952, p. 430). Second, the relay assembly workers' grounds for fearing a piece rate

revision may not have been strong since, in fact, the piece rate was never revised after June, 1927. Third, if, despite all this, fear of a potential revision made sense, then it would seem plausible that such a concern should apply to all of the workers, and not just to two pairs of workers selectively. The conflicting pattern of signs in Table 3 makes it hard to explain interdependence in terms of the likely consequences of "too high" or "too low" group output; see Jones (1984, pp. 28-35) for a fuller treatment, related to the Hawthorne Bank Wiring Observation Room data. While such issues may often be central in studies of the workplace, then, they do not seem to be relevant in the Relay Assembly Room.

An alternative and complementary reason for a negative interdependence is that workers were committed to a target income goal or — equivalently, given the pay system — a target total production goal for the group as a whole, so that slacking off by one induced compensatory greater efforts by another. Although there is brief mention of this type of interdependence in the original accounts, it probably does not explain all of the negative interactions.

¹⁴ The change in seating was from an order of 1, 2, 3, 4, 5A, L to an order of 4, 2, 5A, 3, 1, L, where L represents the layout operator (Whitehead 1938, Volume I, p. 147).

is not supported by the descriptive data. The example most consistent with the statistical results comes when "we saw Op. 4 adopting Op. 2's sentiments with respect to their work situation and acting as her assistant in spurring the group towards higher, and yet higher, outputs" (Whitehead 1938, Volume I, p. 157). But the view that "Operator 4 was independent in thought and action and never allowed other operators to impose upon her" (Roethlisberger and Dickson 1939, p. 168) is not consistent with the interdependence of output levels reported in Table 3.

Second, according to the descriptive material, worker 2 was the "ablest" of the group, "whether judged by intelligence tests or by any other standard" (Whitehead 1938, Volume I, p. 120) and was seen as "the acknowledged leader of the group" who "often chided another operator who had an abnormal amount of defective relays or who took an excessive amount of personal time out" (Roethlisberger and Dickson 1939, p. 167). She had a particular need for income when she first joined the group, her father having recently been laid off (Whitehead 1938, Volume I, pp. 122-23), and this was one factor in her adoption of a leadership role in the group. Also, there is self-professed evidence that she had motives other than money: as she said early in 1929, "It isn't so much the money we care about as it is being considered the best and the fastest group" (Whitehead 1938, Volume I, p. 134). This evidence is consistent with her output being the highest, on average (see Table 1), and with the significant coefficients on worker 2's output in three of the other four equations (worker 5 being the independent exception). It is also consistent with the sum of the coefficients across the rows of Table 3 being largest for worker 2, another indication of her leadership role. However, the dependence of worker 2's output upon the output levels of the other group members — except that of worker 5 — emerges from the estimates in Table 3. Indeed, it is for worker 2 that the hypothesis that "no one affects her" is rejected most strongly. This latter effect does not line up well with the verbal accounts given by Whitehead and Roethlisberger and Dickson.

Overall, however, there is a high — perhaps surprisingly high — degree of correspondence between the present statistical analysis of worker interdependence and the verbal accounts given by the early Hawthorne researchers. The interdependence of worker 5, the sympathies and friendships between several pairs of the women, and the antipathies between some others are all

reflected both in the statistical results and in the detailed descriptions of the daily interaction in the Relay Assembly Room. In their "first statistical analysis" of the Hawthorne data, Franke and Kaul rather dismissively termed these prior accounts "little more than opinion" (1978, pp. 623-24). On the present reading, however, these early opinions were in fact remarkably close to the mark.

IMPLICATIONS OF WORKER INTERDEPENDENCE

One final calculation highlights the potential importance of accounting for worker interdependence in an assessment of the role of external and experimental variables upon output. I computed the reduced-form short-run elasticities (proportional changes) of each worker's output in response to a change in several of the external or experimental variables, using the preferred set of unrestricted system-wide results from the equation estimated for Table 3. This calculation involves solving out the worker interdependence coefficients in the five equations simultaneously in order to write the reduced-form of the system with worker outputs appearing only on the left-hand side of the equations.¹⁵ The resulting figures show the overall response of each worker's output to a change in the variable in question, taking all of the other workers' responses and the interdependence of output into account. These are compared with the short-run elasticities that

¹⁵ In matrix notation, the system represented by equation (5) for $i = 1, \dots, 5$ can be written as

$$q = (I - \Lambda) q(-1) + \Lambda [BZ + CX + \alpha q + u]$$

where q is a vector of output levels, $q(-1)$ denotes the corresponding vector of lagged values, and Λ is a diagonal matrix where the diagonal terms are the adjustment coefficients, λ_i . B and C are coefficient matrices corresponding respectively to the vectors of variables Z and X . The vector X is stacked so the C matrix contains many zeroes, representing the exclusion restrictions associated with these person-specific regressors. The intercept term from equation (5) in the text is subsumed into Z as a vector of ones. Finally, α is the matrix of worker interdependence coefficients (with zeroes on the leading diagonal); it is this that must be eliminated to arrive at the reduced-form. That is,

$$q = (I - \Lambda\alpha)^{-1} [(I - \Lambda) q(-1) + \Lambda BZ + \Lambda CX + \Lambda u]$$

where I is a 5-by-5 identity matrix.

Table 4. Implications of Worker Interdependence and Independence For Output Levels: Short-run Effects of Changes in Selected Exogenous Variables

Variable	Worker					Effect of a Separate One Percent (1%) Increase in Each Exogenous Variable on Total Group Output
	1	2	3	4	5	
<i>Interdependence Elasticities</i>						
Unemployment rate	.351	-.280	-.122	.317	-.129	.137
Days per week	.278	.161	-.281	-.186	-1.463	-1.490
Scheduled rest time	-.184	1.445	-.402	-1.692	-3.939	-4.773
Heat wave	.000	.006	-.003	-.007	-.020	-.024
Cold wave	.001	-.001	-.001	.001	-.002	-.001
<i>Independence Elasticities</i>						
Unemployment rate	.065	.032	.042	.086	.031	.255
Days per week	.060	-.005	.043	.044	-.049	.094
Scheduled rest time	.051	.034	.054	.046	.030	.215
Heat wave	-.001	-.000	-.001	-.001	-.000	-.003
Cold wave	.000	-.001	-.000	-.000	-.000	-.002

Notes: All elasticities (proportional changes) are calculated at the sample means. The worker interdependence elasticities are calculated from the unrestricted system estimates (partly reported in Table 3), as explained in the text. The worker independence estimates are calculated from the same model where all worker interdependence effects were constrained to be zero.

result when a restriction of *independence* is imposed,¹⁶ thereby assessing the overall importance of worker interdependence for understanding the effects of the external and experimental variables on worker output.

These various elasticities are computed at the sample means in both cases and are reported in Table 4. In interpreting these figures, it should be borne in mind that they result from the estimated equations, and that these equations are themselves estimated with error. The first panel contains the person-specific elasticities with respect to selected variables for each of the five group members under the interdependence model. The second panel presents the analogous figures when independence is imposed. The differences between these two sets of results are striking, with numerically larger elasticities in the interdependence case for almost all workers and variables; in several cases, even the sign of the response changes. Assuming worker independence, an increase in the unemployment rate, for example, would lead to an increase in

the output of every worker. But when interdependent output levels are taken into account, the effect is actually a sizable increase in the output of worker 1, a smaller increase for worker 4, and decreases for the remaining three group members. Similar erroneous inferences about the signs of the other elasticities would result if one wrongly assumed independence.

As a summary of these effects, I calculated the contemporaneous effect on total group output (measured as relays per hour) that would result from a one percent increase in each of these five variables, again evaluated at the sample mean. The overall effect for the unemployment rate is an increase of .14 percent, according to the estimated model, contrasting with the .26 percent rise from the independent predictions. "Days per week" and the measure of scheduled rest time have strikingly opposite effects in the two cases, with the magnitude of the effect being considerably larger in the interdependence model. The weather variables have similar signs under these two scenarios, although these responses to a one percent change in the incidence of extreme weather conditions are always small. In short, the statistical results show that the structural process generating the reduced form

¹⁶ In the notation of the preceding footnote, this independence restriction is simply that $\alpha = 0$, a matrix all of whose elements are zero.

involves considerable worker interdependence and that the reduced-form elasticities of this system would be very different in the absence of interdependence.

CONCLUSION

This paper has presented a straightforward analysis of worker output levels in the Relay Assembly Room of the Hawthorne plant using precise weekly data over a five year observation period. The central question behind the enquiry has been whether or not the workers' output levels were interdependent, given the external and environmental conditions in which the workers operated. Using instrumental variable techniques to purge the endogeneity of contemporaneous output levels, it was found that, across a wide variety of specifications, the data clearly reject a null hypothesis of independence. Also, the role of external and experimental control variables is much weaker once the presence of worker interdependence is recognized. Several simple descriptions of the nature of this interdependence were tried, but each set of cross-equation restrictions was rejected. Instead, a rich pattern of dependent output decisions emerges, one that reflects the particular situation at the Hawthorne plant and, to some degree, the personalities of the workers in the Relay Assembly Room.

This work supplements that of the original Hawthorne researchers, who did not employ multivariate statistical techniques, and stands in contrast to the work of more recent researchers, who did not investigate the question of interdependence. When current methods of statistical analysis are applied to the original data, the conclusion is that worker output levels were indeed interdependent, even allowing for a host of other factors that may have affected behavior. The human relations approach to industrial sociology is not controverted by the original Hawthorne data from which it began.

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NEW PROCESS TECHNOLOGY, JOB DESIGN, AND WORK ORGANIZATION: A CONTINGENCY MODEL*

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The introduction of programmable machines into blue-collar machining occupations affords an opportunity to study the conditions under which occupational skill upgrading occurs with technological change. How do workplaces that permit blue-collar occupations to take on programming responsibilities differ from those that do not? This paper presents a contingency model explaining how this choice of job design is mediated by four types of factors: techno-economic forces, internal labor market structures, institutional mechanisms for governing the labor-management relationship, and the organizational context. The data are from a 1986-87 national survey of production managers in a size-stratified random sample of manufacturing establishments in 21 industries. A multivariate logistic regression analysis reveals that the technology and product market alone do not determine job design. The least complex organizations (small plant, small firm) tend to offer the greatest opportunities for skill upgrading, independent of techno-economic conditions — a finding at variance with current labor market segmentation theory.

The relationship of technological change to changes in the division of labor is of long-standing concern to sociologists (Erikson 1986; Garnsey 1981). Sometimes "technological change" refers to the development of new products. Product innovations have only an indirect impact on work through growth in the demand for these new goods or services and therefore in the derived demand for a particular mix of occupations. By contrast, a process innovation involves qualitative change in the technique and tools of work and directly induces change in skill requirements and work roles (Blau, Falbe, McKinley, and Tracy 1976; Blauner 1964; Davies, Dawson, and Francis 1973; Meissner 1970). Unlike product innovation, process innovation is not tied to a specific industry segment or product market, but tends to affect a group of occupations, often across an array of industries, all of which to some degree employ the same techniques, tools, or machinery. The more broadly applicable the innovation, the larger the set of occupations and the greater the variety of industries in which the direct effects

of the technological change will be observed. This diversity creates the opportunity to observe empirically the institutional and organizational contingencies that mediate the impact of a new technology on work.

Programmable automation (PA) — the use of computers to direct and control the operation of machines — is an example of a contemporary process innovation that has been introduced in a large number of manufacturing industries. The main application of PA has been to precision metal-cutting operations of turning, milling, grinding, and boring. These operations are batch production activities for which fixed cycle automation is not applicable. According to the *Dictionary of Occupational Titles* (U.S. Department of Labor 1977), more than 100 different occupations use machines that are being replaced by programmable automation.¹ Moreover, technologists expect that this innovation will diffuse to other industrial operations because of its ability to greatly reduce unit operating costs,

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¹ According to unpublished data provided by the Office of Technology Assessment of the U.S. Congress from the U.S. Bureau of Labor Statistics 1982 Occupation by Industry matrix, employment in these

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improve product quality, and increase economies of scope (Ayres 1984; Hirschhorn 1985; Freeman and Peretz 1986; Kaplinsky 1984; Piore and Sabel 1984). In this paper, I analyze the impact of programmable automation on one important aspect of the division of labor: the design of jobs that use this new technology.

THEORETICAL PERSPECTIVES

A general agreement seems to be emerging as to which aspects of the organization of work and work relations are important for analyzing the effects of technological change (Form, Kaufman, Parcel, and Wallace 1988; Sorge and Streeck 1988; and Spenner 1983, 1988). At the job level, the main issue is how new technology affects occupational skills and worker autonomy. At the organizational level, the emphasis is on how power and authority relationships change, especially between supervisory and subordinate occupational groups. However, there is still considerable disagreement about whether technological change will always affect the social organization of work in the same way.

At one extreme is a viewpoint that has been described variously as the "de-skilling" perspective (Spenner 1983), the "pessimistic" scenario (Form et al. 1988), and "degradation of work/polarization of skills" approach (Sorge and Streeck 1988). This view is associated with Braverman (1974) and labor process theory as treated by Glenn and Feldberg (1979), Noble (1979), Shaiken, Herzenberg, and Kuhn (1986), and Wallace and Kalleberg (1982). From their perspective, all process innovations are designed under management's direction to be labor-saving; they are introduced for the sole purpose of reducing management's dependence on workers' skills. In general, new technologies are expected to create simpler, more routine jobs at the bottom of the organizational hierarchy while concentrating the more demanding responsibilities in a few specialized work roles near the top. Workers in the de-skilled jobs have limited discretion to make autonomous decisions. Moreover, the concentration of high skill demands in a few professional and managerial work roles enhances the power of these groups at the expense of workers in the lower level

blue-collar, clerical, and service occupations.

At the other extreme is a viewpoint that stresses the evolution of work roles toward greater complexity and skill through progressive waves of technological change. This so-called "upgrading" approach as described by Sorge and Streeck (1988) and Spenner (1983), or the "optimistic" scenario in the language of Form et al. (1988), is most recently associated with Hirschhorn (1984), but gained wide acceptance in the 1960's and early 1970's through the writings of Bell (1973), Blauner (1964), and Friedmann (1961). In general, the persistence of low-skill manual jobs is viewed as the result of an incomplete cycle of technological change. With successive waves of process innovation, these writers expect such occupations to be automated away. The more highly automated a process becomes, the greater the tendency of the remaining work roles to exhibit a high degree of individual autonomy and skill, and a broadening of decision-making responsibilities. For the organization, there is a tendency towards decentralization of control and a devolution of hierarchical structures.

Although differing greatly in their forecasts of how process innovations will affect the organization of work, the downgrading and upgrading perspectives arise from a technologically deterministic framework. Both imply that technological change embodies a logic and a trajectory that is eventually manifest in the organization of work. However, recent reviews of research in this area (Kelley 1986; Spenner 1988) find no overriding trend and suggest there is *no* distinctive technical logic shaping the organization of work.

In contrast to such a framework is the "contingency" approach proposed by Form et al. (1988), which is similar to the "socio-technical choice" model described by Sorge and Streeck (1988). Both papers credit organizational and institutional forces with providing a powerful impetus for shaping the impact of technological change on work. But they differ on where the opportunities for choice (or contingencies) arise and hence the possibilities for different forms of work organization to emerge under a given technological regime.

At first glance, the socio-technical choice viewpoint seems to suggest that there is no technological constraint on the organization of work (cf. Trist 1981). On the one hand, the socio-technical system is viewed as being extremely malleable, determined only by the strategic

occupations is found in all but six of the 121 industries [at the 3-digit standard industrial classification (SIC) level] in the manufacturing sector, and in a number of service industries as well.

concerns of decision-makers. On the other hand, the contingencies that shape management's choice of technology and organizational design are largely determined by the economic environment. Socio-technical systems theory presupposes a strict congruence between the choice of technology and the form of work organization (cf. Woodward 1965; Perrow 1967). For example, if the firm operates in markets where high quality, customized products (or services) are demanded, then one type of technology, organizational size and structure, and form of work organization will be "chosen" to fit that economic environment: the small firm characterized by an artisan form of work organization in which control over technology is highly decentralized. This is the limiting case of the theory of flexible specialization (Piore and Sabel 1984; Kern and Schumann 1984, 1987).²

In such models, the opportunity for contingency occurs only at the strategic level. Once managers choose a strategy, there is a particular combination of technology and work organization that is assumed to be the correct configuration for that strategy. Organizations using the same strategy are not expected to deploy a new technology much differently from one another. Hence, in this view, the resulting form of work organization is constrained solely by the economic environment and choice of technology.

The most serious deficiency of this approach is that it does not allow for the possibility that organizations facing similar product markets and employing similar technologies will differ — in size and complexity, for example — and that these differences may condition management's deployment of a new technology. As Child (1975, 1977) suggests, the economic environment is not the only context that matters. For example, the administrative problems of large, complex organizations are also contingent factors that influence management decisions about the structuring of work roles and work group relationships.

By contrast, the related contingency perspective sketched by Form et al. (1988) permits the organizational and institutional context to influence not only the choice of technology but how it is implemented. Drawing on extensive

research on the segmentation of labor markets, they argue that the most important factor determining the effect of technological change on job skills, worker autonomy, and subordinate-supervisory relationships is whether the workplace is in the core or peripheral sector of the economy. Past labor-management practices in different market segments are the best predictors of how a new technology will be implemented. In unionized workplaces with highly structured internal labor markets (the primary labor market), technological change leads to skill upgrading whereas, for workers in nonunion workplaces without structured internal labor markets, the same technological change implies skill downgrading.

Although provocative in its contention that what matters is the organizational and institutional context in which technology is introduced, the embedding of that proposition in labor market segmentation theory seems too equivocal and imprecise for constructing a contingency model. The morphology of labor market segments is changing (Pfeffer and Baron 1988). It is no longer clear whether any enduring features distinguish so-called primary labor markets from secondary markets. With the declining importance of unionized workplaces and the growth of the nonunion share in various sectors (including manufacturing), highly regulated internal labor markets are no longer uniquely associated with unionized establishments (Foulkes 1980; Mills 1985).

Moreover, new mechanisms for worker participation and control seem to be supplanting the paradigmatic system of internal labor market regulation that is the foundation of dual labor market theory (Cole 1982; Kochan, Katz, and Mower 1984; Parker 1985). It is conceivable that collective bargaining agreements and the highly structured internal labor markets devised for one technological regime have become a source of rigidity impeding the reorganization of blue-collar work roles to permit expansion of responsibilities with the use of new technology.

To be comprehensive, a contingency approach should take into account four types of influences. First, aspects of work organization attributable to the technology itself or its evolutionary path must be clearly delineated (Dosi 1988; Nelson and Winter 1977). Second, it must consider how variability in demand for the products or services influences the organization of work. Third, the effects of labor relations

² Critics such as Wood (1988) and Sorge and Streeck (1988) see the flexible specialization thesis itself as a variant of technological determinism because of its emphasis on the market as the determinant of the choice of technology, organizational size, structure, and form of work organization.

institutions and internal labor market structures have to be specified. Finally, it should consider how and to what extent the organizational context in which a process innovation is introduced influences work roles and work group relationships.

TECHNOLOGICAL CHANGE AND WORK TRANSFORMATION

The primary principle for evaluating a process innovation is its cost-savings (Ayres and Miller 1983; Rosenthal 1984).³ With a few notable exceptions (e.g., medical, military-related, or public safety technologies), improvements in process technologies have a cost-saving element. These cost savings may arise from less wastage of expensive materials (due to error reductions), substitution of cheaper for more expensive materials, or labor savings.

To the extent that a process innovation embodies labor savings, there is some technological imperative underlying the reshaping of the division of labor. Labor savings may involve little or no change in task responsibilities, or it may entail the elimination of entire occupations. New skills and responsibilities may also be created.

The Impact of Programmable Automation on Skills

Skill is multidimensional (Spenner 1983, 1988; Kelley 1984, 1986) and a given technological change may affect more than one dimension and in different ways. Not all skill changes are of equal importance for the organization of work and power relations between occupational groups. A technological change that reduces the physical demands of an occupation may simply be thought to make work "easier" but not necessarily to imply "de-skilling" or a loss of autonomy and control.

Researchers agree that programmable automation reduces manual skill requirements (Burnes 1988; Jones 1982; Kelley 1986, 1989a,b; Noble 1979; Zicklin 1987). There is also less demand for tasks requiring relatively high degrees of cognitive skill. The major economic advantage of programmable automation

³ To be sure, not all process innovations are designed for the sole purpose of reducing costs, but generally, even when quality improvements are an important objective, there is also an expected cost saving.

is cheaper and faster setups and retooling (Edquist and Jacobsson 1988, pp. 31-3), resulting in a diminution of skills required to perform these setup and layout tasks. On conventional machine tools, such responsibilities mandate a high degree of cognitive skill (Kelley 1984, 1986; Shaiken et al. 1988). Programmable machine operators no longer control the direction and speed of machine movements as they did when operating conventional, pre-computer machines. If no other changes were to occur in these jobs, we would conclude that not only were the manual and cognitive skill requirements reduced but the opportunity for individuals in such occupations to exercise autonomy and control had also been diminished by technological change.

With programmable automation, a new responsibility emerges: composing and testing programs for controlling machine operations. Programming tasks require the same or higher levels of cognitive skill demands as the layout and set-up tasks on conventional machines.⁴ Programming provides a new means of control over machine operations similar to that exercised in manipulating hand levers on a nonautomated machine. Whether major responsibility for the creation of new parts programs is located in setup and operative work roles is therefore a key indicator determining the effect of programmable automation on these positions.

The Implications of Alternative Job Design Strategies

Instead of delegating major responsibility for creating programs to blue-collar workers setting up and operating these machines, a new white-collar profession specializing in writing parts programs could be created (Burnes 1988; Jones 1982; Kelley 1986, 1989a,b), or programming responsibilities could be added to existing managerial and engineering occupations. The latter two strategies centralize control over the production process in a small core of professionals and managers. By contrast, assigning

⁴ According to Spenner (1983) and Form (1987), substantive complexity is the key attribute for comparing the cognitive skill requirements of jobs. Of all metal-cutting occupations listed in the *Dictionary of Occupational Titles*, those with major responsibility for layout and setup on conventional machines are rated as having the highest degree of "substantive complexity" as measured by the DATA dimension of the worker function scale (Kelley 1984).

programming responsibilities to workers who set up and operate the machines disperses control over the production process. The choice of strategy may also alter authority and power relations between major occupational groups within the establishment. At the job level, the choice of strategy determines how skill and autonomy are affected for particular work roles. Looking at hierarchical relationships within the organization, the chosen strategy signifies how power and control over the work process are becoming centralized or decentralized. Power relations between the white-collar and blue-collar groups may also be affected, since power derives from the exercise of skill and control over production (Burawoy 1979; Edwards 1979).

SOURCES OF VARIATION IN JOB DESIGN

As long as new skills are created along with a labor-saving technology, there is some latitude for managers to redesign work roles (Althauser and Kalleberg 1981; Baron and Bielby 1980). The type of job design strategy chosen will reflect organizational and institutional forces as well as technological or economic factors. The major research questions for specifying a contingency model are: 1) which institutional and organizational attributes exert an independent effect; and 2) how do they influence management's choice of job design strategy?

The Trajectory of Technological Change

New process technologies sometimes become widely diffused in a very short period of time, as occurred with the use of personal computers for word processing during the past five years. The diffusion of other process innovations can be quite slow, occurring over a twenty- to thirty-year period. During that time, several generations of the technology may be developed, each with different capabilities and dissimilar implications for the organization of work.

Programmable automation was developed nearly 30 years ago but did not become widely used until the late 1970's (Noble 1984; National Academy of Sciences 1983). The first generation of this technology, the numerical control (NC) machine, had no internal editing or programming capability. All program creation took place away from the machine, presenting a logistical impediment to including programming

functions in blue-collar occupations (Jones 1982). In workplaces that still rely exclusively on this version of the technology, we would expect to find no blue-collar programming.

The second generation of programmable automation, the computerized numerical control (CNC) machine was introduced in the late 1970's. Unlike its pre-microprocessor predecessor, programs can be created and edited at a CNC machine work station. Control panels, video display terminals, and keyboards at the machine make it an accessible form of programmable automation for workers at these machines to create, proof out, and edit new programs. Yet even though CNC facilitates programming in such work roles, *the early deployment and persistence of NC machines is expected to present a technical impediment and economic disincentive to the assignment of programming responsibilities to machine operative and set-up occupations.*

The economic advantages from one form of work organization may only become apparent as more workers use the new technology. Any advantage associated with a particular organization of work should be most apparent in those workplaces where adoption of the new technology is most complete. Specifically, *the greater the substitution of programmable automation for conventional technology in the machining process, the greater the effect on the choice of job design strategy.*

The Characteristics of Product Market Demand

According to socio-technical systems choice theory, the economic environment influences both the choice of technology and the form of work organization. The market for an establishment's goods and services can be characterized by the degree of variability in demand for its products. In Piore and Sabel's terms, fragmented markets are economic environments of high variability in which producers specialize in making customized goods and services, typically in small batch sizes. Small batch production is identified by Woodward (1965) with a broad, artisan form of work organization based on handicraft technology.⁵ At the time of her research, however, a flexible automation technology was not widely available to supply such

⁵ One problem with Woodward's framework is identifying a core technology and process at an establishment. When a varied mix of goods and serv-

customized markets.

Set-up costs per batch are an important proportion of unit costs when output is in small lot sizes compared to large batch or mass production. Programmable machines can reduce the costs of manufacturing goods made in small size lots. However, to realize these economic advantages, a highly responsive, "flexible" form of work organization may be necessary (Hirschhorn 1984; Piore and Sabel 1984). A job design strategy that places a high value on skill versatility and responsiveness permits workers broad latitude to make decisions and to exercise extensive control over the tools and machines they use. The incorporation of programming responsibilities into the machine operative and set-up work roles permits the immediate response and changeover needed to fully exploit the technology for small batch production. Hence, I expect that *when programmable automation is used for highly customized small batch production, major responsibility for writing new parts programs will be integrated into work roles where machine set-up and operating functions are performed.*

Internal Labor Market Structures

In industrial-type internal labor markets, seniority rules regulate mobility among jobs. A seniority-based system of promotion and job assignment serves the interests of industrial unions concerned about curbing the arbitrariness of management's selection criteria. It also serves management by encouraging the social reproduction of skills from one generation to another through informal on-the-job learning (Doeringer and Piore 1970). Since experienced workers in high status jobs needn't fear displacement by junior workers, they would be willing to share their accumulated informal knowledge about the production process.

According to Edwards (1979), both union and nonunion employers have adopted seniority systems because they provide an orderly mechanism for selecting individuals from among a group of similarly qualified employees. In Edwards' view, the skill differences are small between low- and high-level positions in pro-

duction ladders to which seniority rules have been applied. The main purpose of a seniority system is to reduce turnover and promote employee loyalty.

If Edwards is correct, we would expect organizations that rely on a seniority system for regulating job assignment and promotion to develop a narrowly specialized division of labor and to have a tendency to generate new specialty occupations, even when a new technology presents the possibility for enlarging jobs. A broadened job category, such as when major programming responsibilities are combined with set-up and operating tasks, would be inconsistent with the job design approach underlying an industrial-type internal labor market.

There is another reason to expect seniority rules to inhibit management from designing blue-collar jobs to include programming responsibilities. When a new technology is introduced, management is uncertain which skills and qualifications are important to fully exploit the new machines. Intangible worker traits, such as an eagerness to learn or a willingness to ask for advice from engineers or more technically trained managers, may be more important than particular educational qualifications or work experience. Rather than specifying objective criteria to justify selection on some basis other than seniority, management may simply choose a job design strategy which avoids the seniority system.

Seniority rules constrain management's selection of workers for particular job assignments in both union and nonunion workplaces (Mills, 1985). Since formal seniority rules usually apply only to blue-collar jobs, assigning programming to a white-collar occupation effectively removes it from the seniority system. I therefore expect *blue-collar jobs to not include the new task of programming where seniority systems prevail.*

The internal labor market for machining occupations may also be regulated by "craft" rules. In a craft-type internal labor market, entry to certain high-skill occupations is restricted to those who complete an apprenticeship program. Among machining occupations, there are several crafts, such as tool maker and all-round machinist, that are recognized by the U.S. Bureau of Apprenticeship Training as apprenticeable trades. Whether the presence of an apprenticeship program increases the likelihood of blue collar programming depends on whether there are non-craft machining jobs at the plant as well. *When an apprenticeship program is the*

ices is produced at a given facility, it is difficult to determine the core or main activity. By selecting a well-defined, easily recognizable *subprocess* as the unit of analysis, I avoid characterizing an entire organization (in this case, a plant) by its "principal" or "core" activity (Gerwin 1979; Starbuck 1980).

sole entry point for all machining occupations at a plant, I expect a positive association between the presence of an apprenticeship program and the inclusion of regular programming duties among machining occupations. A machining apprenticeship program indicates that an artisan form of work organization exists, and a broad, task-integrative approach to job design is likely to prevail.

When there are dual entry points, an apprenticeship program provides restricted access to certain craft-type machining occupations at the plant (Walsh 1989). Machining operations not performed by workers in craft-type occupations are assigned to more narrowly specialized jobs for which the completion of an apprenticeship program is not required. In this case, the more routine activities of the noncraft occupations may be more susceptible to automation (Ayres and Miller 1982; Haddad 1989a; Milkman 1989). *If dual ports of entry for machining occupations are the norm, apprenticeship programs are not likely to be associated with blue-collar programming.*

Unionization

If unions were effective vehicles for resisting management efforts to diminish the power that workers derive from the exercise of their skills, the presence of a union would increase the chances of blue-collar workers having major responsibility for programming. But the impact of unionization cannot be understood merely as a reflection of organized worker resistance to management efforts to gain greater control over the production process. The industrial relations systems and management's power to circumvent union pressure need to be considered. There are great differences between U.S. and western European countries' industrial relations systems, both in the degree of involvement of union representatives in the selection of technical options and in the mechanisms by which unions can influence job design. In Sweden, for example, unions are usually involved in hardware and software selection decisions. West German unions influence the organization of work through negotiations over vocational education curriculum and standards for "qualifying" workers to perform such duties as programming NC and CNC machines. Under the U.S. industrial relations system, by contrast, management is not required to bargain with a union over the decision to introduce a new technology. U.S.

unions rely largely on "protectionist" work rules concerning wage rates, manning requirements, and eligibility for promotion to influence the way in which new technology is implemented (Haddad 1989b). This "job control" approach characteristic of U.S. trade unions does not limit management's discretion to design new jobs (Herding 1972).⁶

In the United States (unlike West Germany and Sweden), managers and most white-collar technical and clerical occupations are not covered by a collective bargaining agreement. Designating programming a white-collar task increases managerial discretion by removing the issues of selection, work methods, and wage-setting for these tasks from the collective bargaining arena. Considering the bargaining approach of unions and the latitude afforded managers with respect to the creation of new occupations in the U.S., the presence of a union is not likely to improve the chances of programming being assigned to blue-collar jobs. Indeed, *to avoid being subject to the constraints of a collective bargaining agreement, management will be less likely to assign regular programming duties to unionized blue-collar jobs.*

Labor-Management Committees

Since the early 1970's, a participatory mechanism has emerged that is ostensibly designed to increase workers' influence over management decisions. In both union and nonunion establishments, joint labor-management committees have been established to resolve production problems or to deal with work issues arising from the introduction of new technology (Cole 1982). Such collaborative arrangements are expected to increase productivity and job satisfaction among production workers (Foulkes 1980; Kochan et al. 1984). *If labor-management committees are an effective vehicle for improving the quality of blue-collar jobs, then I expect the delegation of programming responsibilities to blue-collar jobs to be more likely in workplaces with such committees.*

In unionized workplaces, collective bargaining is another institutional mechanism for governing the labor-management relationship. Crit-

⁶ Most contract provisions dealing with technological change in the U.S. concern the bidding rights of workers displaced by the change, income protection, safety and health, retraining and relocation assistance (Kempski 1989, p. 7; Roberts 1983, pp. 11-26; Solomon 1987).

ics of worker participation programs in nonunion settings argue that they do not provide an independent voice for workers' interests and are not likely to lead to enhanced worker control (Parker 1985). Thus, my empirical model tests *whether the expected positive impact of worker participation in joint problem solving committees on job design is realized only when there is also a union.*

Organizational Complexity: Size and Structure

Manufacturing plants are formal organizations of varying size, complexity, and bureaucratic structure. Large organizations are more complex and highly differentiated than small organizations (Beyer and Trice 1979). Differences in organizational size, complexity, and structure are reflected in the organization of work (Pugh, Hickson, and Hinings 1969). For production operations, the organizational context in which these activities are embedded exerts a powerful influence on the structure of work (DiMaggio and Powell 1983).

The problem of coordination and control is especially great for large manufacturing enterprises with a variety of operations in branch plants that must be integrated in some way. Management in these firms is more likely to develop a centralized corporate decision-making authority (Chandler 1977; Child 1972). *In large plants of multi-plant enterprises in which programmable automation has been introduced, I expect planning and control concerns will lead to a tendency to centralize major programming responsibilities in managerial and specialty occupations.*

By contrast, small single-plant enterprises lack a highly differentiated management hierarchy and rely instead on simple systems for the coordination and control of production. Furthermore, the lack of differentiation among management and the flatness of its hierarchical structure should carry over to the design of blue-collar jobs. These will be broadly constructed to include a wide range of skills and responsibilities. *Thus, in small single-plant enterprises, regular programming duties are more likely to be incorporated into blue-collar jobs.*

Formalization of the Work Process

Although the design of blue-collar jobs at an establishment generally reflects the system of

control (centralized or decentralized) that is consonant with its organizational size and complexity, subprocesses within a plant may diverge from that overall pattern. Through a set of "switching rules," subprocesses may vary in the degree of discretion permitted in work roles (Drazin and Van de Ven 1985). In the same establishments, workers will have a high degree of autonomy in one subprocess and in another, they will not. Similar to Perrow (1967), Van de Ven and Delbecq (1974) argue that, in a formalized process, task uncertainty is reduced and there tends to be specialized work roles in which employees exercise little discretion. *If systematized procedures exist for the performance of routine tasks in the machining process, I do not expect programming duties to be appended to these work roles.*

Professionalization of Production Management

Bennis (1966) argues that the more professionalized the management bureaucracy, the greater the tendency to decentralize decision-making. Coordination in a professionalized bureaucracy depends on the capacity to delegate new responsibilities to a highly qualified staff capable of performing a diverse array of tasks. *If professionalized management encourages decentralized decision-making that extends to the blue-collar domain, I expect to find major programming responsibilities attached to blue-collar jobs.* Perrow (1979), on the other hand, suggests that professionalization of management may imply greater participation of low-level managers in decision-making, but does not include occupations below the managerial level. If Perrow is correct, then I would *not* expect the professionalization of management to influence the design of blue-collar jobs.

DATA AND METHODS

The data for this analysis are from a 1986-87 national survey of production managers in U.S. manufacturing establishments in 21 industries (at the 3-digit SIC level) engaged in some aspect of metalworking (Kelley and Brooks 1988).⁷

⁷ The questionnaire was designed by the author in collaboration with Harvey Brooks. Technical assistance for the survey design and sampling procedures was provided by Mary Ellen Colten and Steven Dubnoff. The Center for Survey Research of the University of Massachusetts-Boston administered the

Previous surveys of organizations tended to exclude small establishments. Our sampling procedures were designed to ensure a representative sample of establishments of all sizes, using disproportionate stratified random sampling. All population estimates are weighted averages, constructed by weighting each observation by the inverse of the probability of selection from its sampling stratum. For 1,015 plants, the production manager most knowledgeable about machining operations completed the mail survey, for an effective response rate of 50 percent. Systematic comparisons between those who responded to the questionnaire and a 50 percent random sample of those who did not reveal little or no statistically significant nonresponse bias for all variables. Correction for bias was deemed unnecessary.

The analysis is based on the data from plants reporting the use of some type of PA technology — NC or CNC machine tools, a flexible manufacturing system (FMS), or some combination of these three. Forty-three percent of the plants are classified as PA-users, having at least one programmable machine. Because large complex organizations (with smaller sampling weights) are more likely to adopt PA (Kelley 1988), the unweighted number of PA-using plants is higher than a weighted estimate of the PA-using proportion of the sample. Of the 627 PA-using plants in the sample, 506 provided useable information on all variables. PA users display considerable variation in plant size and product markets, but small establishments (fewer than fifty employees) specializing in small batch production (median batch size of fewer than 50 units) constitute nearly 43 percent of the sample of plants using PA.

A Contingency Model for Explaining the Likelihood of Blue-Collar Programming

My objective is to explain which kinds of establishments are likely to incorporate the new task of programming in machining jobs. How has this indicator of skill upgrading been operationalized? The survey distinguished different degrees of programming responsibility for five major groups of setup and operative machining occupations.⁸ Production managers were asked:

survey in 1986-87. The data analyses were conducted using SAS, version 5.6, on an IBM 3083 computer. The data set will be in the public domain in 1992.

⁸ The five occupational groups are: setters specializing in one type of machine, setters responsible

1) How often do workers in this occupation edit or alter a program created by someone else? 2) How often do workers in this occupation create new parts programs? The possible answers are "never," "on occasion," or "frequently." Blue-collar jobs were considered to include major programming responsibilities only if the response was "frequently" to the latter question for any of the machining occupational groups. This definition is deliberately restrictive, excluding work roles in which programming functions are ancillary to the main tasks of machine set-up and operation.⁹

In fifty-six per cent of the plants using PA technology, blue-collar machining occupations were found to include major programming responsibilities. On average, two-thirds of PA-using workers in such plants had such programming responsibilities added to their job duties. Hence, where management decides to delegate major programming responsibilities to any blue-collar job, most PA-using workers benefit from that *skill upgrading* approach.

A logistic regression equation was estimated using the maximum likelihood technique to examine why the skill upgrading of these work roles occurs with the new technology in some workplaces and not others. The dependent variable, blue-collar programming, equals 1 if any machining job includes major programming responsibility, and equals 0 otherwise. Eleven independent variables (defined in Table 1) are employed in the analysis.

FINDINGS

Results are presented in Table 2. Of the 11 variables hypothesized to have an impact on the inclusion of programming responsibility in blue-collar occupations, six (customized product, NC share, seniority system, union, organizational

for a diverse array of machines, specialized setup operators, diversified setup operators, and machine tenders.

⁹ If there is any bias in the perspective of production managers as to the extent to which blue-collar workers actually perform such programming responsibilities, it would be a tendency to underestimate the informal exercise of programming responsibilities. However, there is no reason to assume that production managers who are well-informed about the technology generally are poorly informed about programming responsibilities when they are formally sanctioned by management and explicitly incorporated into these work roles as frequently performed duties.

Table 1. Definitions of Independent Variables

Variable	Definition
Techno-economic Variables	
Customized product	= 1, if 50 percent or more of machining output is in batch sizes of fewer than 10 units; otherwise = 0
NC share	= NC tools/Programmable tools NC tools = number of tape-operated numerically-controlled machine tools with no built-in editing controls at the machine; Programmable tools = number of programmable machine tools of any type, including NC, CNC machines with a built-in capacity to alter programmed instructions at the machine, and flexible manufacturing systems (FMS), i.e., computer-controlled production systems in which groups of programmable machines are coordinated
PA intensity	= (machining workers mainly using PA)/(total workers using any type of machine tool)
Internal Labor Market Structures	
Seniority system	= 1, if seniority rules determine eligibility for job assignments or promotions for non-supervisory employees; otherwise = 0
Apprenticeship program	= 1, if there is a formal machining apprenticeship program of at least three years duration at the plant; otherwise = 0
Labor Relations	
Union	= 1, if production workers at the plant are unionized; otherwise = 0
Labor-management committee	= 1, if there are joint problem-solving committees made up of both blue-collar workers and managers who meet regularly to deal with any of the following problems: implementation of new technology, quality control, other production problems, or any other issues; otherwise = 0
Union and L-M committee	= Union \times labor-management committee (interaction term)
Organizational Structure	
Organizational complexity*	ranges from -1.8 (small plant, simple structure) to 2.4 (large plant, complex structure)
Formalized methods	= 1, if machining workers are usually required to follow written orders specifying a detailed plan of work = 0, if these workers are only occasionally or never required to follow such orders
Professional management	= 1, if a college degree is required for employees to perform the following responsibilities: the development of quality control standards or the setting of production standards and methods = 0, if less than a bachelor's degree is required for production managers performing these functions

*The organizational complexity scale was generated from a factor analysis using four variables: *firm size* as measured by the natural logarithm of employment in the entire company or corporation; *plant size* as measured by the natural logarithm of the total number of employees at the plant; *multi-plant* coded 1 if more than one plant is owned and operated by the company in the United States, and 0 for single-plant enterprises; *intra-firm sales* coded 1 if output from machining operations at the plant is shipped to other plants of the company, and 0 if not. Two factors were generated from the initial common factor solution. The first factor, called organizational complexity, was retained; it explained 91.4 percent of the common variance and had an eigen-value of 2.23. The Appendix shows the mean values for these elements of organizational complexity for seven intervals of the factor score scale.

complexity and professional management) are significant predictors, all in the expected direction.

To illustrate how these factors contribute to the likelihood of blue-collar programming, I estimated the probability of blue-collar programming for specific values of each significant variable, setting all other variables in the model

to their sample means. The results of these simulations are displayed in Table 3.

Economic Conditions and Technical Choices

Consistent with Piore and Sabel's flexible specialization thesis, the chances that programming responsibilities will be added to blue-collar

occupations are significantly increased if machining output is produced in small batches (i.e., a median batch size of less than 10 units). Holding other variables constant at their sample means, the chances of blue-collar programming are 1.6:1 in these plants compared to 50:50 for plants not specializing in highly customized production.

The share of all machining workers using PA tools (PA intensity) has no significant effect on blue-collar programming. However, the logistical difficulties posed by the lack of an interactive programming capability at an NC machine present a formidable technical bar to blue-collar programming. The greater the NC share of all PA tools used in a plant, the more likely management is to depend on programming specialists or other white-collar workers in programming departments off the shop floor, rather than allowing operators to leave their machine stations to do the programming.¹⁰ When all PA tools are of the NC type, the chances of blue-collar programming are therefore only 1:1.8. When NC tools are half of all PA tools, there is an even chance (1:1) of blue-collar programming. When a plant has only CNC tools (NC share = 0), the chances of blue-collar programming are best at 1.8:1.

Internal Labor Market Structures and Unionization

The presence of a seniority system or a union has a sizable impact on management's job design strategy. In nonunion workplaces with no seniority system, the chances of blue-collar programming are higher at 1.9:1 than would occur if all NC vintage technology were eliminated. With a union, the chances are only about 1:2.1 that production jobs will include major programming responsibilities; when coupled with a seniority system (union = 1 and seniority system = 1), the chances of blue-collar pro-

Table 2. Logistic Regression Model of the Likelihood of Blue-Collar Programming

Variable	Mean (S.D.)	Hypo- thesized Effect	Regression Coefficient (S.E.)
<i>Techno-economic</i>			
Customized product	.425 (.495)	+	.437* (.232)
NC share	.319 (.374)	-	1.151** (.301)
PA intensity	.349 (.234)	?	-.741 (.478)
<i>Internal Labor Market</i>			
Seniority system	.370 (.483)	-	-.679** (.221)
Apprenticeship program	.219 (.414)	?	-.201 (.257)
<i>Labor Relations</i>			
Union	.170 (.376)	-	-1.158* (.502)
Labor-management committee	.488 (.500)	+	.004 (.233)
Union and L-M Committee	.102 (.303)	+	.340 (.638)
<i>Organizational Structure</i>			
Organizational complexity	-.664 (.883)	-	-.899** (.163)
Professional management	.210 (.408)	+	.634* (.280)
Formalized methods	.371 (.484)	-	-.007 (.240)
Intercept			.378
-2 log likelihood			566.06
χ^2 (d.f. = 11)			128.86
N			506

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

gramming are reduced even further, to about 1:3.3.

One explanation for the large negative union effect may be the unwillingness of U.S. managers to share control over a new technology with a unionized work force. Alternatively, the union effect may be related less to management's antipathy towards unions than to a desire to avoid the regulatory constraints of collective bargaining. That we find seniority systems (independent of unionization) to significantly reduce the chances of blue-collar programming, as well, provides support for the latter interpretation of the union effect.

¹⁰ The decision to adopt NC largely reflects management's preference for this design over CNC machines. Two-thirds of all NC purchases have occurred within the past ten years when CNC machines with interactive programming capabilities were becoming widely available. A continued preference for NC machines and their limited capacity for operator-intervention is also evident in our survey of managers' plans for purchases of PA machines between 1987 and 1989. The stock of NC tools is expected to increase by 13 percent through new purchases over that two-year period.

Table 3. Estimated Probabilities of Blue-Collar Programming for Selected Values of Specified Variables^a

X_j	Probability of Blue-Collar Programming	Likelihood Ratio
Customized product = 0	.506	1.0:1.0
Customized product = 1	.613	1.6:1.0
NC share = 0	.640	1.8:1.0
NC share = .5	.500	1.0:1.0
NC share = 1.0	.360	1.0:1.8
Seniority system = 0	.613	1.6:1.0
Seniority system = 1	.446	1.0:1.2
Union = 0	.600	1.5:1.0
Union = 1	.321	1.0:2.1
Union = 0 and Seniority System = 0	.659	1.9:1.0
Union = 1 and Seniority System = 1	.235	1.0:3.3
Professional management = 0	.519	1.1:1.0
Professional management = 1	.671	2.0:1.0
<i>Organizational Complexity</i>		
-1.80 (small, simple)	.774	3.4:1.0
-1.50	.723	2.6:1.0
-1.25	.676	2.1:1.0
-1.00	.625	1.7:1.0
-.75	.571	1.3:1.0
-.50	.516	1.1:1.0
-.25	.460	1.0:1.2
.00	.404	1.0:1.5
.25	.352	1.0:1.8
.50	.302	1.0:2.3
.75	.257	1.0:2.9
1.00	.217	1.0:3.6
1.25	.181	1.0:4.5
1.50	.150	1.0:5.7
1.75	.123	1.0:7.1
2.00	.101	1.0:8.9
2.25	.082	1.0:11.1
2.40 (large, complex)	.073	1.0:12.7

^a For each variable X_j of value V ,

$$(1) Z_j = \sum_{i \neq j} \hat{b}_i \bar{x}_i + \hat{b}_j X_j$$

$$(2) \text{Prob}(\text{BCP} = 1 | X_j = v) = e^{Z_j} / (1 + e^{Z_j})$$

$$(3) \text{Likelihood Ratio} = \frac{\text{Prob}(\text{BCP} = 1 | X_j = v)}{1 - \text{Prob}(\text{BCP} = 1 | X_j = v)}$$

Countervailing Bureaucratic Influences

I hypothesized that conformance to formalized methods of works would imply limited discretion for workers obliged to adhere to them. In workplaces where machining workers are required to follow detailed written specifications in carrying out their tasks, I expected a smaller chance of such workers being assigned major responsibility for creating new parts programs. The presence of formalized procedures had no significant effect on the likelihood of blue-collar programming.

By contrast, there is a strong countervailing influence of managerial professionalization on bureaucratic structure. In plants with credentialed professionals in production control functions (professional management = 1), there is a significant tendency to decentralize control over the technology and permit blue-collar programming. Holding all other variables constant at their sample means, the marginal effect from professionalization is estimated to increase the likelihood of blue-collar programming by nearly thirty percent. In plants with professional managers, the likelihood of blue-collar jobs including major programming responsibilities are about 2:1.

Organizational Complexity

The size and complexity of firms largely explains why control over programming is decentralized in some workplaces and not others. Small single plant enterprises (organizational complexity scores ≤ -1.0) are workplaces where programming responsibilities are most likely to be decentralized.¹¹ In such workplaces, the chances that machining occupations will include major program-writing responsibilities are better than 1.7:1. The larger and more complex the organization, the greater the pull towards centralization of control over the technology and the lower the probability that blue-collar jobs will incorporate programming responsibilities. Among large plants of large, multi-plant enterprises (organizational complexity scores ≥ 1.5), the chances of blue-collar programming are very small, 1:5.7 at best.

¹¹ Establishments with such low scores on the organizational complexity scale are invariably small plants of single-plant firms, with about 10 employees, on average. See the Appendix for average establishment and firm characteristics for intervals of the organizational complexity scale.

Large, complex organizations are far more likely to have adopted programmable automation and to employ a disproportionate share of those workers who set-up and operate these machines. But these organizations tend not to consign major responsibility for programming to blue-collar jobs. Small firms are less likely to have adopted PA, but when they do they are more likely to permit blue-collar workers to do the programming. As a consequence, only 13.6 percent of all PA-using workers in all plants have major programming responsibility (Kelley, 1989c). The bureaucratic imperative to centralize control is very strong. If organizational size and complexity were the only determinant of job design, the majority of machining workers presently employed in large multi-plant enterprises would stand little chance of ever having their jobs upgraded by the addition of major programming responsibilities. But the development of new institutional arrangements and the evolution of the technology itself may counter this bureaucratic imperative. We can see this most clearly by studying the practices of establishments with only the most recent generation of PA technology.

Recent vs. Experienced Adopters: Assessing the Technological Trajectory

The high degree of uncertainty and risk associated with early adoption of any new technology, and the lack of user-friendly menu-driven software in early stages in the development of PA, may have once made managers unwilling to permit blue-collar programming. Having separated programming from traditional machining work roles, one might expect experienced PA users to be less willing to permit blue-collar programming, even though recent software developments have made it technically easier to do so. Institutional inertia, rather than technical barriers, may be an impediment to the reorganization of work. By contrast, recent adopters do not have a history of established practices circumscribing the way in which PA technology may be deployed.

Among "recent adopter" workplaces with less than a five-year history of PA use, there is a significantly higher incidence of blue-collar programming than occurs among "experienced users" of PA that is not explained by differences in organizational size and complexity.¹² Two-

Table 4. Logistic Regression Model of the Likelihood of Blue-Collar Programming for Recent Adopters and Experienced Users of Programmable Automation

Variable	Recent Adopters ^a		Experienced Users ^b	
	Mean (S.D.)	Regression Coefficient (S.E.)	Mean (S.D.)	Regression Coefficient (S.E.)
<i>Techno-economic</i>				
Customized product	.606 (.491)	1.315* (.593)	.347 (.477)	-.094 (.319)
NC share	.238 (.409)	-1.739** (.658)	.354 (.352)	-.841* (.388)
PA intensity	.320 (.236)	-.597 (1.152)	.362 (.233)	-1.223* (.592)
<i>Internal Labor Markets</i>				
Seniority system	.346 (.478)	-.108 (.548)	.381 (.486)	-1.037** (.269)
Apprenticeship program	.252 (.436)	-1.838** (.557)	.205 (.404)	.425 (.349)
<i>Labor Relations</i>				
Union	.131 (.338)	-3.544* (1.972)	.188 (.391)	-.854 (.602)
Labor-management committee	.536 (.501)	.236 (.577)	.467 (.500)	-.325 (.294)
Union and L-M Committee	.073 (.261)	4.145* (2.148)	.115 (.319)	-.550 (.840)
<i>Organizational Structure</i>				
Organizational complexity	-.829 (.773)	-1.104** (.402)	-.592 (.918)	-.852** (.200)
Professional management	.260 (.440)	2.351** (.761)	.188 (.391)	-.205 (.359)
Formalized methods	.353 (.480)	1.087* (.615)	.379 (.486)	-.356 (.291)
Intercept		-.598		1.026
-2 log likelihood		113.49		395.63
χ^2 (d.f. = 11)		50.53		126.89
N		129		377

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

^a Adopted programmable automation for the first time within the past 5 years.

^b At least 5 years experience with programmable automation.

thirds of recent adopters permit machining occupations to include major responsibility for parts programming compared to only one-half of experienced users. In order to examine the

the two groups in their mean organizational complexity factor scores.

¹² Indeed, there is no statistical difference between

influences of the explanatory variables for different generations of PA users, separate regressions were run for these two groups. The results are displayed in Table 4. There are significant differences between the two groups of PA users in the factors influencing the likelihood of blue-collar programming.¹³

Among experienced users, the greater the share of the machining work force utilizing that technology (PA intensity), the less likely blue-collar jobs are to include major programming responsibilities. If this were the only difference between experienced users and recent adopters one might interpret this finding as indicating an overall de-skilling of machining occupations as the transformation of the process by the new technology proceeds. However, there is also a sharp contrast between recent adopters and experienced users in the remaining variables.

Among recent adopters, unionized workplaces with labor-management problem solving committees are associated with a high probability of blue-collar programming. The likelihood that programming will be included in the blue-collar occupations in these workplaces more than offsets the negative effect associated with unionization alone. The chances of blue-collar programming are best (at 9.3:1) for the "average" recent adopter with a union and a labor-management committee structure, *but without* an apprenticeship program. Under these circumstances, a seniority system no longer influences the likelihood of blue-collar programming. With a union and labor-management committees but neither a seniority system nor an apprenticeship program, the estimated chance of blue-collar programming is somewhat higher at 10.4:1. By contrast, among experienced users, the institutional arrangements most conducive to the delegation of major programming responsibility to blue-collar jobs occurs in workplaces with an apprenticeship program, no union, and no mechanism for employee participation in joint problem solving with management (Labor-management committee = 0 and Union \times Labor-management committee = 0). Under these circumstances, for the "average" experienced user, the chances favoring blue-collar programming are 2.7:1.

¹³ The χ^2 for the difference in likelihood ratios, i.e., the restricted [-2 log likelihood = 566.06] minus the unrestricted [-2 log likelihood = 113.49 + 395.63 = 509.12] = 56.94. This difference is statistically significant at $p \leq .005$.

With less than half of all eligible plants adopting programmable machines (as of 1987), and with few plants completely converted, PA technology must be said to be at an intermediate stage of diffusion. If the greater tendency of recent adopters to choose a skill-upgrading approach to the design of blue-collar jobs can serve as a guide, it seems likely that history will not repeat itself: the trajectory of PA technology evident among experienced users is not likely to be replicated among recent adopters in the near future.¹⁴ Indeed, the overall trend in management's approach to blue-collar job design may depend as much on the spread of a new system of labor relations as on how widely the technology is diffused to small enterprises with simple organizational structures.

CONCLUSIONS

A new process technology such as programmable automation alters the organization of work in definite ways and changes the nature of tasks to be performed. But the resulting *form* of the organization of work is not pre-determined by the technology nor by its trajectory. This does not imply that management's choice of job design strategy is completely unfettered. To a great extent, management's choice is constrained by economic, organizational, and institutional forces.

One source of pressure shaping management's job design approach comes from the plant's product market. When manufacturing for highly customized products and parts, there is an impetus towards decentralization of control and a broadening of jobs with new technology.

More important than the economic environment is the organizational context in which the new technology is used. Small "organically" structured simple organizations tend to assign programming responsibilities to blue-collar occupations, whereas large "mechanistic" bu-

¹⁴ Another dramatic difference between recent adopters and experienced users is evident in the role of professional production managers. Among recent adopters, professional production managers were an important influence on the decision to decentralize control over programming. The emergence of a professional ethos that is supportive of a highly decentralized decision-making structure will likely be a major factor determining the future direction of work re-structuring and in developing the kind of collaborative labor relations system necessary to support it.

reaucracies have a more specialized division of labor and a strong tendency to centralize programming responsibilities at the white-collar technical or managerial level. Although management's choice is constrained by bureaucratic imperatives and internal labor market structures, new mechanisms for governing the labor-management relationship present opportunities for altering institutional rigidities.

These findings contradict established theory concerning the influence of labor relations systems and internal labor market structures. These results show that the presence of a union (by itself) and an industrial-type internal labor market consistently imply divorcing programming from blue-collar jobs. Only when there is a joint problem solving mechanism can the negative consequences of unionization be offset — and then only in workplaces that use only the latest generation of the technology.

Contrary to dual labor market theory, the opportunities for skill upgrading of blue-collar occupations seem to depend more on an informal system of cooperation and collaboration between management and workers than on labor contracts or the regulation provided by internal labor market structures. Such informal and close contact occurs "naturally" in very small, simple organizations, usually nonunion and with neither an industrial nor craft type of internal labor market. The absence of bureau-

cratic control in small, simply structured organizations does not always imply an arbitrary or an authoritarian management. Instead, in such workplaces we are more likely to find the boundaries between supervisory and subordinate work roles to be less well defined, allowing workers in key processes such as machining to have considerable decision-making responsibility. Under some circumstances, formal mechanisms designed to promote informal collaborative problem solving can be effective counterweights to the tendency of highly structured, rule-based organizations to reconstitute a narrowly specialized division of labor. At the very least, these results suggest that present theories of segmentation and dualism need to be reconsidered, taking into account the appearance of new institutions for employee participation and governance and the importance of informal, horizontal ties across occupational domains.

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Appendix. Factor Score Intervals and Means of Variables Defining Organizational Complexity

Organizational Score Interval ^a	Number of Plants	Firm Size ^a	Plant Size ^a	Multi-Plant ^b	Intra-firm Sales ^c
-1.8 ≤ S < -1.0	65	10	10	.00	.00
-1.0 ≤ S < -0.5	123	42	39	.04	.00
-.5 ≤ S < 0.0	87	161	85	.38	.19
0 ≤ S < 0.5	64	365	108	.94	.45
.5 ≤ S < 1.0	70	1,738	297	1.00	.38
1.0 ≤ S < 1.5	63	14,592	400	1.00	.43
1.5 ≤ S ≤ 2.4	34	109,066	2,021	1.00	.64

^a Log transformations of these variables are used in the factor analysis.

^b Multi-plant = 1 if the parent company has more than one U.S. plant; otherwise = 0.

^c Intra-firm sales = 1 if the production manager reports that the output of machining operations at this establishment is "shipped to other plants of this [parent] company"; otherwise intra-firm sales = 0.

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LIFE TRANSITIONS, ROLE HISTORIES, AND MENTAL HEALTH*

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Major life changes and role transitions are often treated as stressors that create a generalized demand for adjustment by the individual. Empirically, however, these transitions have been shown to produce a wide range of effects on mental health. Two kinds of models have been proposed to explain this variation: differential access to coping resources for dealing with stressful situations, and variation in the characteristics of transitions, such as their undesirability, foreseeability, etc. This paper emphasizes a logically prior issue: the role context within which the transition event occurs, specifically, the level of pre-existing chronic stress in the social role. The model tested envisions life transition events as nonproblematic, or even beneficial to mental health, when preceded by chronic role problems — a case where more “stress” is actually relief from existing stress. Nine transition events are studied: job loss, divorce, pre-marital break-up, retirement, widowhood, children moving out of the house, first marriage, job promotion, and having a child. Results support the hypothesis that prior role stress reduces the impact of life transition events on mental health for seven of nine events, with some differences in impact by gender. The findings provide a basic framework for interpreting the effects of varying types of life transitions, and argue against the presumption that life transitions are inherently stressful, suggesting instead a need to specify prior social circumstances that determine whether or not a transition is potentially stressful.

The majority of studies on the impact of stressful life events suggests only a modest correlation with mental health (Rabkin and Streuning 1976; Thoits 1983). The usual explanation is that the overall association masks a wide range of impacts in different segments of the population and across different types of events.

The search for the causes of the differential impact of life events has produced two major research traditions. One relies on the differential vulnerability argument (Kessler 1979; B.S. Dohrenwend 1973; Pearlin, Lieberman, Menaghan, and Mullan 1981) in which differences in coping resources or strategies, ongoing dispositional qualities, or social locations determine the impact of events. This approach has

spawned a large sub-tradition focused on the buffering effects of social support (Cohen and Wills 1985). The second tradition contends that events vary in stressfulness because of differences in such characteristics as undesirability, uncontrollability, unpredictability, and event magnitude (Thoits 1983; B.P. Dohrenwend 1974). This tradition has been labelled the “trait” approach, and implies that we can identify the most important events using an array of event characteristics that specify stress potential.

In this paper, I address a logically and causally prior issue, namely, whether the potential for impact of an event is defined by the person’s accumulated experience in the role that is altered by the transition — what can be termed the “role history” prior to the event. Since it is not feasible to measure all facets of role history, I focus on the level of chronic and ongoing stress in the role, reflecting the configuration of demands, responsibilities, inequities, uncertainties, and interpersonal problems persisting through time in the role environment.

How does the prior role environment influence the impact of a life transition on mental health? Instead of being stressful, life events may at times be either nonproblematic or even

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beneficial by offering escape from a chronically stressful role situation — creating the apparent paradox of more “stress” functioning as stress relief. If this is the case, then concern about coping strategies and social support may be misplaced for some individuals experiencing life course transitions currently treated as “stressful” in the literature. If prior role circumstances largely determine the impact of the event, then it is a misspecification of the problem to look for factors which modify the impact of the “stressor” once it occurs.

A CONTEXTUAL APPROACH TO LIFE TRANSITIONS

Recently, a third, contextual approach to the problem of the differential impact of life events has appeared in the literature. The contextual approach uses information about the individual's current life circumstances to specify the stressfulness of events.¹ Brown and Harris (1978) used extensive information on social circumstances surrounding an event to score its “inferred threat.” The problem with this method is that the factors used to make this designation could be considered as separate variables with independent effects on mental health, and thus should not be incorporated into the measurement of life events (Dohrenwend, Link, Kern, Shrout, and Markowitz 1987). The contextual approach of Dohrenwend et al. (1987) uses five separate dimensions to describe the context of an event, such as the independence of the event from the individual's psychological condition, the desirability of changes that followed, and the effect of the individual's behavior on the event. These dimensions are treated independently of the scoring issue.

The approach in this paper also involves specification of the event context, but its main feature is the presence or absence of chronic role stress prior to the event. An essential starting point of my approach is the distinction between *chronic* stress and the more widely known “life event” form of stress. The latter refers to discrete, observable events which are thought to be threatening because they represent change. But many stressful *situations* cannot be treated as events, such as excessive levels of constant noise in the work place, regular and persistent

disagreement with a spouse about childrearing, living with a chronically ill family member, or the pressure of financial debts. The stress in these situations derives more from the absence of change than the problem of too much change, and cannot be subsumed by the event tradition (Wheaton 1986).

Chronic stress is analogous to the stress model of physical mechanics (Smith 1987), rather than a model based on organismic responses to trauma (Selye 1956). Stress in physical mechanics involves a continuous “load” and slowly accumulating wear-and-tear, aspects of stress that are not captured by the ideas of change and crisis inherent in the event approach. Chronic stress, then, refers to continuous and persistent conditions in the social environment resulting in a problematic level of demand on the individual's capacity to perform adequately in social roles (Wheaton 1986).²

Chronic role stress is likely to be a central feature in understanding individual differences in the experience of a life transition. The meaning of a divorce after a “bad” marriage will surely be quite different than a divorce after a “good” marriage. Getting fired from a job where you hate the boss or that is excessively dangerous will lead to different mental health consequences than getting fired from a secure, interesting job with ample opportunities for promotion. When a long-term alcoholic dies, his or her spouse is likely to feel some relief from the burden of a difficult caretaker role.

These examples suggest that the potentially harmful mental health consequences of transition events will be moderated, if not entirely eliminated or reversed, by the presence of prior chronically stressful role problems. This prediction involves testing for a negative interaction between potentially stressful life transitions and levels of prior stress in the same role. In this approach, life transition events are not treated as universal stressors. In fact, they may at times be opportunities for legitimate or fortuitous escape from a difficult situation.

² The importance of this distinction is highlighted by the findings of recent studies which suggest that the effects of ongoing stress are as strong if not stronger than event stressors (Pearlin and Schooler 1978; Brown and Harris 1978; Kessler and Essex 1982; Wheaton 1983; Eckenrode 1984; Link et al. 1986; Krause 1986; Avison and Turner 1988). Thus, it is plausible that prior ongoing stress may be a central factor in understanding the stressfulness of a life transition.

¹ The use of the term ‘context’ here is specific to this tradition and does not imply a social network or a structural location approach.

This approach provides a generalizable model for the specification of the differential stressfulness of widely varying types of life transition events. Nine events are studied: divorce, premarital break-up, unemployment, retirement, widowhood, children moving out, getting married, job promotion, and having a child. These events are considered life transitions because they either denote exit from one role and entry into another, or they denote significant redefinition of role conditions. These transitions vary along a number of dimensions: some are major events, others are relatively minor; some are scheduled and predictable, others are unscheduled and less predictable; some include an element of volition, others do not; some are clustered at specific points in the life course, others are not.

Testing whether prior chronic role stress ameliorates the effect of a transition out of that role could be complicated by the possibility that role problems and the occurrence of a transition are highly related. In fact, this will not be the case, even for unscheduled or unforeseeable events. The determinants of job loss may have little to do with the individual's work problems and a lot to do with problems of the economic system. Most divorces involve an initiator and another who is forced to accept the situation. The initiator is in a position to anticipate and prepare for certain aspects of the separation process, and is also more likely to be the one to see serious marital problems beforehand. The "victim," on the other hand, is likely to be unprepared and, compared with the initiator, to have perceived marital problems to be less important. The two different perspectives will produce varying reports on the state of the marriage before a divorce. These built-in processes weaken the correlation between role problems and the event.

RELATIONSHIP TO OTHER APPROACHES

The contextual approach to the study of life transitions outlined in the previous section can be distinguished from other approaches in four basic ways: First, the usual predictions for the combined effect of chronic and event stressors involve either a stress accumulation effect in which the stress of events and chronic role problems work additively, or a stress overload effect in which chronic role problems aggravate the effect of life changes (Brown and Harris

1978). The latter hypothesis makes most sense when the role problem involves a different role than the one involved in the transition, a situation in which the transition cannot resolve the ongoing role problem.

Second, events such as divorce, unemployment, death of a spouse, and retirement are thought to be stressful regardless of the role context because they set in motion sequelae which are themselves stressful and threaten the individual's identity (Thoits 1983). The question, then, is whether the context of the event overwhelms the issue of adjustment to change. The theory that life transitions "have a life of their own" and thus are inherently stressful due to the relocation and transformation of identity is a common and alternative viewpoint.

Third, chronic role stress is causally prior to the coping and social support activated by the occurrence of the stressful event. But some aspects of support and coping exist as resources apart from the occurrence of stress, and these may be seen as alternative possibilities to the present model. These include structural aspects of support availability, perceived support, and coping resources such as aspects of personality or other dispositional characteristics existing prior to the transition.

Finally, the contextual approach to life transitions suggests that transition events should not be aggregated into an inventory indicating total event exposure (Holmes and Rahe 1967). Summing events can mask the variability in social circumstances that underlie the impact of each separate event, leading to the underestimation of the stressfulness of events for some and overestimation for others.

THE STATE OF THE EVIDENCE

Is the "stressful event as stress relief" model already present in the literature on individual events and transitions? A recent review of the literature on widowhood (Wortman and Silver 1989) finds no adequate explanation of the fact that a significant proportion of people dealing with death of a spouse do not experience grief. Prior role stress as a contingency predicting absence of grief in some cases has not been considered.

The notion that previous difficulties may mitigate the impact of a major life transition has been raised in the divorce literature. Kitson and Sussman (1982) predict that mental health problems following divorce will be lower among

those who suffered marital problems before the divorce. But their sample is composed entirely of the divorced, which does not allow for an assessment of variation in the effect of divorce contingent upon prior marital stress. Menaghan and Lieberman (1986) tested such an interaction and found none, but their marital problems measure was more a measure of distress created by the marriage than a direct measure of marital problems.

Kasl's (1979) review of the literature on unemployment and retirement suggests a similar conclusion: although the effects of previous work environment have been considered, the importance of prior context has not been demonstrated. He concludes that "variations in post retirement outcomes are most convincingly seen as reflecting continuities of preretirement status" (1979, p. 185) and "variables reflecting aspects of the work role ... are not powerful or consistent predictors of [mental health] outcomes" (1979, p. 186). The possibility that the effect of unemployment depends on the previous work environment is not considered. Subsequent research either emphasizes the role of social support as a stress-buffering resource (e.g., House 1981) or the main effects of unemployment (Kessler, House, and Turner 1987), although there is some recent concern with the effect of job conditions on the benefits of reemployment (Kessler, Turner, and House 1989).

Thus, while the hypothesis of this paper is implied in some life transition literatures, it is not specified as the generalized impact of preexisting chronic role stress, and even if it were, the basic prediction here has not been empirically demonstrated within or generalized across types of events.

DATA AND METHODS

Study Design and Sample

The data are from a national survey of Canadian adults 18 and older. A multi-stage, stratified cluster design was used, involving both a representative cross-section sample ($N = 3288$) and a follow-through of a random sub-sample of the 1977 cross-section as a panel with re-interviews in 1979 and 1981 ($N = 1665$). The panel component is analyzed in this paper. Problems due to attrition bias and panel selection are considered in the analysis.

This longitudinal study includes a multi-item measure of mental health (distress), tracks by

year the occurrence of a number of life transitions and events, and provides comprehensive assessments of problems in selected role situations at each interview. Thus, role problems can be measured for the period prior to an event, and initial distress levels in 1977 can be controlled in all models. Any effect of distress on the perception or reporting of role problems, whether real or a measurement artifact, can be accounted for in the partialling of effects. Further, the sample is sufficiently large and heterogeneous to yield examples of relatively rare events. Only transitions that occur during the four-year course of the study are considered in the analysis.

Measures

Distress. Distress is an index comprised of 12 symptoms of depression and anxiety measured in 1977 and 1981. The symptoms are taken from well-known mental health scales, notably the General Health Questionnaire (GHQ) and the Center for Epidemiological Studies Depression Scale (CES-D), as well as items measuring general well-being. The items are broadly representative, including reported unhappiness, feeling in low spirits, self-reported "poor" state of health (thought to be as indicative of emotional as of physical problems), frequent unexplained headaches, pains in muscles and joints, sleeping problems, nervousness, feeling fearful often, feeling depressed, feeling tense, worrying a lot, and feeling hopeless about the future.

Items were coded to indicate symptomatic status by designating anyone in the upper 20 to 25 percent on frequency of occurrence (depending on the cutting point in the nearest response category) as a 1 and everyone else as 0, and then summed to create an index. This creates an approximate symptom metric which is useful in gauging effects.³ The distress index has an alpha reliability of .77 in 1977 and .83 in 1981.

Events and Problems. The interview included questions on the occurrence of a number of life and role transitions as well as probes to determine the year of occurrence. Measures of chronic role problems were derived from responses to items covering four areas: marriage, relation-

³ Because interactions are being tested, all models were replicated with a distress index based on summing the ordinal responses in order to assess sensitivity of effects to coding of the outcome measure. None of the results were affected by this re-coding.

ships when unmarried, work, and parenthood (see Appendix). These items were repeated at each interview, so that the response in 1979 was used if a role transition event had not occurred and the response in 1977 was used if it had occurred by 1979, etc.

Marital problems is a 9-item scale emphasizing absence of affection, lack of fulfillment of companionship and sexual needs, limitation of freedom, insufficient sharing of parenting and household tasks, and overall dissatisfaction ($\alpha = .80$). The pre-marital relationship problems scale is largely composed of parallel items ($\alpha = .72$). The work problems scale includes twelve items, with an emphasis on unpredictable hours, exhausting work, excessive monitoring and supervision, boring work, low pay and absence of security, and unpleasant physical surroundings ($\alpha = .74$). The parental problems scale measures concerns about children with two items — dissatisfaction with the way they are growing up, not living up to hopes or expectations — and concerns about being a parent with two items — lack of enjoyment of the parent role, and feelings that parenthood limits freedom ($\alpha = .65$).

Each scale, except for the work problems scale, involves items with different response formats. Thus, total scores were standardized to a mean of zero and a standard deviation of one to facilitate comparison of results across cases and to simplify interpretation of interactions. The work problems scale was a simple count of problems, reflecting the dichotomous nature of the items.

The model to be tested assumes that these problems are chronic rather than situational. Stabilities of each role problem measure were calculated using the Wiley and Wiley (1970) specification of the three-wave single-indicator model, thus taking into account the unreliability of each measure. These stabilities were high in every case, with a correlation over two years ranging from .70 for work problems to .99 for relationship problems. Clearly, the problems measured represent chronically burdensome situations. In addition, these stabilities suggest the appropriateness of interpreting these role problems as a facet of role history.

Control Variables. In each model tested, a number of control variables were considered. These included controls for additive and interactive effects of some variables. A set of controls found to be generally important to outcome distress levels was used in initial models for each event, including sex, number of children,

age of respondent, education, personal or family income, having a confidant (besides one's spouse) to talk to about problems, distress in 1977, and reported income loss. Additional controls were used for particular events, including, for example, marital status when assessing the effects of job loss, and employment status when assessing the effect of divorce.

In the analysis of each event, commonly hypothesized interactions between the event and some of these controls were tested first.⁴ Significant interactions are incorporated in the results.

Analytic Strategy

In addition to the basic set of controls, three other kinds of factors were incorporated into the analysis: time since the event, re-entry into the same role, and bias due to attrition from the panel and explicit selection of sub-samples for analysis.

Because the number of cases was too small for some events, and the dating of events for years between interviews was unclear for others (e.g., job loss) a compromise approach was used in specifying time since event. This involved distinguishing between occurrences of each event between 1977-1979 and between 1979-1981 using two dummy variables for event occurrence in each analysis. In the case of three events — pre-marital break-ups, widowhood, and getting married — there were too few cases (less than 30) to assess differential effects by time since event. Tests on the other events showed that time since event made a clear difference only in the case of divorce. For other events, event occurrence is measured using a single dummy variable.

Re-entry into the same role was considered as an additional control wherever possible, since this might alter the impact of the original event. For example, re-marriage was controlled in the divorce analysis, getting a new job was controlled in the unemployment analysis, getting married was controlled in analysis of break-ups, re-marriage was controlled in the widowhood analysis, etc.

Finally, two kinds of sample selection bias

⁴ In the case of divorce, for example, this included terms for divorce by income (by sex), divorce by number of children, divorce by the presence of a confidant, divorce by employment status (by sex), divorce by age (by sex), and divorce by the number of years married.

parameters were included in each model, using procedures based on Heckman (1979) and Berk (1983). To take into account possible bias due to loss of panel members, factors predicting panel membership were studied in the full 1977 cross-section using logistic regression. The results were used to derive a predicted probability of panel membership *for members of the panel*, and this variable was added to all models. In addition, models predicting selection into the various sub-samples used in the analysis were developed, and the predicted probability of nonselection for sub-sample members was also controlled.

In the analysis of each event, a specific procedure was followed for testing the predicted interaction. First, the population at risk for an event was defined (e.g., divorce — all persons married at the beginning of the survey or who married before 1979). Controls were screened for each event transition analysis, first considering them additively and then as parts of possible interactions competing with the interaction of interest.⁵ Distress symptoms in 1977 were controlled in all models, so that effects of events and role problems can be interpreted as net effects on changes in distress symptoms between 1977 and 1981. Each predicted interaction was tested as a two-way term first, but in a number of cases it was necessary to take into account further specificity to describe differences in the applicability of the predicted effect across segments of the population.

The most general form of the equation estimated in each analysis was as follows:

$$S_{81} = a + b_1C + b_2S_{77} + b_3E + b_4O + \\ b_5(OE) + b_6(CE) + b_7(CO) + \\ b_8(OEC) + \text{etc.}$$

where S_{81} is distress in 1981, S_{77} is distress in 1977, C is a set of control variables, E is a dummy variable for the transition event, and O is the chronic role problem measure, measured before any reported event. All interactions reported are significant at the .05 level or less, except where noted.

RESULTS

Job Loss

This analysis includes full-time workers in 1977 and those who started full-time work before 1979 ($N = 877$), of whom 67 experienced involuntary job losses. Of these, 43 reported getting a new job after the job loss. Besides the standard set of controls mentioned earlier, the job loss model also contains specific controls for the effects of getting a new job after a period of unemployment and interactions between a new job and gender, and a new job and work problems in the previous job.⁶ Despite the independent importance of getting a new job, its effects do not interfere with the effects of job loss.

The effect of job loss on mental health depends on a number of factors. The final model included two strong and interpretable 4-way interactions. Each interaction involved three components in common — job loss, prior work problems, and gender, standing for a differential impact by gender of work problems on the experience of job loss. In addition, one interaction has age as a fourth component ($p < .01$), reflecting the importance of stage in the life course, and the other has marital status ($p < .001$). These interactions suggest that: 1) the effect of age is to increase the effect of prior work problems on reducing the impact of job loss among men, while decreasing the effect of prior work problems on job loss among women; and 2) the effect of marital status is to decrease the effect of prior work problems on the impact of job loss among men, and increase the effect among women. Although 4-way interactions can be problematic, results for lower-order models were much less interpretable. Both interactions were highly significant, and they remained so in alternative models.

To take both interactions into account, Table 1 shows the effect of job loss classified by levels of all other variables involved: gender, marital status, age, and prior work problems. The effect of job loss is shown for all sub-group combinations of the categorical variables involved in the interactions (gender and marital status) and at points on continuous variables either one standard deviation above and below the mean only (work problems) or at these points plus the mean

⁵ The actual controls used in the final equation for each event are available from the author upon request.

⁶ These effects indicate that getting a new job had a beneficial effect among men but less of a beneficial effect among women. Previous work problems mitigated the positive impact of a new job.

level (age).⁷ Thus, in Table 1, "low" work problems corresponds to 0 problems, and "high" work problems corresponds to 3 problems, given a mean of 1.5 and an approximate standard deviation of 1.5. Age levels chosen represent -1 standard deviation (25), the mean of the sample (37), and +1 standard deviation (50).

Table 1 presents the effects of job loss as average differences in distress symptoms in 1981 between those experiencing a job loss and those that did not. Since these differences are adjusted for initial 1977 distress symptoms, they correspond to net changes in distress resulting from the job loss. In addition, Table 1 shows differences in the effects of job loss across levels of work problems, thus indicating where the hypothesis applies most clearly.

The number of cases in each marital status/gender group defined by the interactions varies from 12 to 27. While these numbers are small, they are sufficient for detecting the predicted contingencies. For most of the transition events studied, cases were well-distributed across subgroups involved in the interactions.⁸

In every marital status/sex combination except unmarried women, a high level of prior work problems has an ameliorative effect on the impact of job loss in most age groups. For example, in early stages of the work career (age = 25), a two-standard deviation difference in work problems leads to a 1.62 reduction in the predicted symptom differential due to job loss among unmarried men, an insignificant increase of .51 among married men, and a large 3.67-point reduction in the symptom differential among married women. And at age 50, entering the later phases of the work career, there is an even stronger reduction in the job loss effect due to work problems among unmarried men amounting to 3.57 less of a symptom increase, an effect reduction of 1.44 among married men, and a smaller 1.35 effect reduction among married women.

⁷ Effects at the mean levels of continuous variables that further qualify the effect of role problems are included in all tables to facilitate interpretation of the interactions.

⁸ The significance tests for the interactions do not depend on sub-sample sizes smaller than those shown under each table, because the other variables involved are continuous. Further, the post-hoc tests use a confidence interval for group differences (event vs. nonevent) across a set of values on the role problems measure, and thus do not depend on the number of people at the exact points chosen.

Table 1. Adjusted Mean Difference in 1981 Distress Symptoms due to Job Loss, by Level of Prior Work Problems, Marital Status, Sex, and Age

Marital Status, Sex, and Age	Work Problems		Effect Difference
	Low	High	
Unmarried men			
Age = 25	2.25 [†]	.63	-1.62 [*]
Age = 37	3.21 [*]	.65	-2.56 [*]
Age = 50	4.25 [*]	.68	-3.57 [*]
Married men			
Age = 25	.61	1.12 [†]	.51
Age = 37	1.57 [†]	1.14 [*]	-.43
Age = 50	2.61 ^{**}	1.17 [†]	-1.44 [*]
Unmarried women			
Age = 25	-.04	-.71	-.67
Age = 37	-.52	-.08	.44
Age = 50	-1.04	.61	1.65
Married women			
Age = 25	2.48 ^{**}	-1.19	-3.67 ^{**}
Age = 37	2.00 [*]	-.56	-2.56 [*]
Age = 50	1.48	.13	-1.35

[†] $p < .10$ ^{*} $p < .05$ ^{**} $p < .01$

Note: The number of cases experiencing a job loss are: unmarried men = 13, married men = 27, unmarried women = 12, and married women = 15. Effects are shown at two points on the work problems scale: "low," when work problems = 0, a point roughly one standard deviation below the mean; and "high," when work problems = 3, a point roughly one standard deviation above the mean.

This pattern suggests that there are significant and substantial stress relief effects among unmarried men at each age, among married women at younger ages and possibly among married men in older age groups. The stress-relief effect increases with age for men and decreases with age for married women. The size of the job loss effect is generally smaller for married men compared to unmarried men when job conditions were favorable, and generally larger when job conditions were difficult, resulting in attenuation of the stress-relief effect among married men. Only unmarried women show no evidence of a stress-relief effect, primarily because they are the only group that does not suffer a significant increase in distress from job loss even in the context of favorable job conditions, suggesting there is less of a problem in this group in the first place.

The weaker stress-relief effect among married men could reflect the influence of two factors: (1) married men who lose a "good" job may have more support from their wives than is available to unmarried men; and (2) the "male breadwinner" identity may dampen the stress-relieving effect of losing a "bad" job in this group. This would help explain the higher symptom increase among married vs. unmarried men in high stress jobs.⁹ In contrast, married women who have lost favorable jobs have greater distress while unmarried women do not, consistent with the fact that married women enter the work role more often by choice than single women. Thus, loss of the work role when the job is valued may have a greater impact.

Age has opposite implications for men and women in activating a stress-relief effect. Reductions in the effects of job loss due to work problems increase with age for men, and decrease with age for women. This is in part due to differences in the impact of losing a valued job among men and women. The effect of losing a "good" job decreases with age among women, possibly because of cohort-based changes in the value placed on work. Among men, the effect of losing a "good" job increases with age, probably reflecting the fact that there is more to lose and less hope at later stages of the career.

The effect of job loss on distress among those in low stress jobs is sizable. The standard deviation in distress in this sub-sample is just over 2, so changes in distress in excess of a standard deviation occur in a number of groups. Given the absence of significant effects of job loss on distress among those in high stress jobs, it appears that the idea that job loss is inherently stressful should be re-considered.

Divorce

Divorce is a very different kind of transition event because it is usually more permanent and

may involve choice and anticipation. Like job loss, however, it is an unscheduled life transition and is considered a major life event.

The sample of 1065 initially married persons produced 60 divorces over the four-year period. Separate effects are shown in Table 2 for divorce between 1977 and 1979 and divorce in 1980-1981 for two reasons: the effects of earlier divorce had an independent, albeit smaller, effect on final distress compared to recent divorce in initial additive models, and both divorce variables interacted separately with prior marital problems. The interaction with recent divorce was three-way, involving both marital problems and sex, while the interaction between earlier divorce and marital problems applied to both sexes equally. This is important, since it indicates that there are only *short-term* sex differences in divorce to be taken into account. In addition, the effect of marital problems on the impact of recent divorce on distress depended separately on work status. One other contingency arose in the analysis of divorce. There was an interaction between recent divorce and number of children, indicating that the effect of divorce increased the greater the number of children, regardless of marital problems and sex.¹⁰ The results shown in Table 2 are from a model that incorporates all of these interactions plus controls. Results for nonworking husbands are not shown, since there were no divorces in this very small group.

Results in Table 2 show that the stress-relief hypothesis holds without qualification for earlier divorces and only for working wives in the case of recent divorces. Looking at the effects of recent divorce in this group, divorce generally has substantially larger impacts on distress when marital stress is low than when it is high. At the average number of children (2), for example, there is a 2.57 symptom increase in distress among divorced women when there was little prior marital stress compared to a 1.03 symptom increase when there was considerable marital stress. This represents a reduction of the symptom increase resulting from divorce equal to 1.54 symptoms. This effect, combined with the effect of children, leads to a great deal of variability in the impact of divorce on working wives. Divorce produces a 3.51 symptom increase in distress when there are four children

⁹ Another possibility is that men are especially burdened by their parental financial responsibilities. I tested interactions of job loss with work problems, sex, and number of children, and found a barely significant interaction that indicated that children reduced the work problems effect among men. But this interaction was not significant when included with the other interactions already in the model, indicating that the interaction with children may be a spurious reflection of more basic interactions involving marital status and age, each an important background factor explaining the number of children.

¹⁰ The effect of re-marriage was initially included in divorce effect models and was significant (causing further distress!), but became insignificant when interactions were included.

Table 2. Adjusted Mean Difference in 1981 Distress Symptoms Due to Divorce, by Level of Prior Marital Problems, Time Since Divorce, Sex, Work Status, and Number of Children

Time Since Divorce, Sex, Work Status, Number of Children	Marital Problems		Effect Difference
	Low	High	
Earlier divorce	.93 [†]	-.83 ^{**}	-1.76 ^{**}
Recent divorce			
<i>Working husbands:</i>			
# children = 0	1.03	1.67 ^{**}	.64
# children = 2	1.96 [*]	2.60 ^{***}	.64
# children = 4	2.90 ^{**}	3.54 ^{***}	.64
<i>Housewives:</i>			
# children = 0	-.79	-.21	.58
# children = 2	.14	.72	.58
# children = 4	1.08	1.66 [*]	.58
<i>Working wives:</i>			
# children = 0	1.64 [†]	.10	-1.54 [*]
# children = 2	2.57 ^{**}	1.03 [*]	-1.54 [*]
# children = 4	3.51 ^{***}	1.97 ^{**}	-1.54 [*]

[†] $p < .10$ ^{*} $p < .05$ ^{**} $p < .01$ ^{***} $p < .001$

Note: The number of cases of earlier divorce (prior to 1979) is 27. There were 35 recent divorces (post-1979), 12 among working husbands, 13 among working wives, and 10 among housewives. Effects are shown at two points on the marital problems scale: "low" is one standard deviation below the mean and "high" is one standard deviation above the mean.

and the woman thought she had a good marriage, compared to an insignificant .10 symptom increase when there are no children and the woman felt the marriage had problems.

On the other hand, there is no influence of marital stress on the effect of divorce among working husbands, although the effects of divorce on distress are substantial in both low and high stress situations. Among the employed, then, the effect of recent divorce appears to be more context-dependent for women than for men.

How can the negligible effect of recent divorce among housewives, regardless of marital problems, be explained? One possibility is that these women enter the labor force after the divorce, thus counteracting the deleterious impact of divorce on mental health, at least in the short run before the novelty of the new job wears off. While about 34 percent of continuously married women went from the housewife

role into the labor force at some point over the four years, nearly 50 percent of housewives who divorced got a job after the divorce. More importantly, there is a two-way interaction between divorce and getting a new job among housewives. This interaction indicates that there are 1.24 fewer distress symptoms after divorce among housewives who get a job compared to those who do not.

While the magnitude of the effect of earlier divorce is smaller than for recent divorces, results indicate that previous marital problems have even greater import as time passes. The effect of earlier divorce is a .93 symptom increase when marital stress was low. This effect stands for at least a two-year lagged effect of divorce on distress symptoms. This effect is reversed to a -.83 symptom reduction in distress when marital stress was high before the divorce. This is a case, then, when a transition out of a stressful role has a beneficial effect on mental health, possibly acting as a catharsis that resolves the earlier problems. This effect occurs, not immediately, but after two years have passed. Divorces are not described in the stress literature as having positive benefits to mental health under any circumstances.

The effect of marital problems on earlier divorce amounts to a reduction in impact of 1.76 symptoms for a two-standard deviation increase in marital problems — an effect slightly larger than the marital problems impact on recent divorce among working wives. Since the effect of earlier divorce refers to both sexes, this represents a convergence in the experience of divorce as time passes. In other words, it is not that the importance of marital problems has decreased with time among working wives; in fact, the contextual relevance of marital problems has increased with time among working husbands and housewives. Support for the hypothesis is thus targeted only in the short-run and unqualified by gender, work status, or anything else in the long-run.

The question is what kind of explanation of gender and role differences is consistent with these results, including the shift from short-term gender/work status differences to no differences over time. One possibility is that women may be suffering more stress across roles because they are also working. Even though women have been entering the labor force in large numbers, they still perform the major portion of housework and child care tasks (Ross, Mirowsky, and Huber 1983). This means that women

may have less "head room" for further stress accumulation.¹¹ This explanation is consistent with initial differences in the relevance of marital problems between working and nonworking women, and it is also consistent with a trend to convergence in the importance of marital problems as time passes, since these three groups are also likely to converge on issues of total household burden and stress accumulation after the divorce (i.e., men assume more household tasks, housewives get jobs, and the situation of working women changes less).

Pre-Marital Break-ups

An analysis of pre-marital break-ups allows us to look at a parallel situation to divorce, since the relationship problems measure is similar in item content to the marital problems measure. At the same time, a break-up is a relatively minor event compared to divorce, raising the question of the generality of the effect of prior role problems. The sample for this event consisted of 104 nonmarried persons in a relationship at the beginning of the study.¹² There were 30 break-ups in these relationships over the four-year study, 21 of these subsequently entered a new relationship, and 22 out of the total sample of 104 eventually married.¹³

Table 3 presents results for two models, one with controls for eventually marrying and entering a new relationship and one without. In both models, there is a significant two-way interaction between a break-up and previous relationship problems in the predicted direction for both sexes. There is also a significant interaction between breaking up and sex in the first model that became insignificant when controls were added.

¹¹ This argument does not need to posit that women are suffering unusual levels of work stress, only that work stress plus higher levels of demand in domestic roles adds up to an excessive burden.

¹² In order to generate a large enough sample for this analysis, it was necessary to define a relationship rather broadly. Everyone who had not been married and reported living with someone in a romantic relationship or going out with one person primarily in 1977 was included. Those who entered a relationship by 1979 could not be included because there was no way of verifying that the relationship reported in 1979 was the same as that designated by the "started new relationship in the last two years" question in 1979.

¹³ Most of these marriages were in relationships reported at the beginning of the study.

Table 3. Adjusted Mean Difference in 1981 Distress Symptoms due to Pre-Marital Break-ups, by Level of Prior Relationship Problems and Sex

	Prior Relationship Problems		Effect Difference
Model	Low	High	
Without controls for marriage and new relationship			
Men	.81 [†]	-.39	-1.20*
Women	1.99***	.79 [†]	-1.20*
Controlling for marriage and new relationship effects			
Men	-.04	-1.46*	-1.42*
Women	.83	-.59	-1.42*

[†] $p < .10$ * $p < .05$ *** $p < .001$

Note: The number of cases of break-ups in each model are: men = 15, and women = 15. Effects are shown at two points on the relationship problems scale: "low" is one standard deviation below the mean and "high" is one standard deviation above the mean.

Results for the model without controls indicate a 1.20 reduction in the effect of a break-up on distress for a two-standard deviation increase in prior relationship problems. Results in the model with controls suggest that entering a new relationship or getting married reduces the absolute size of the break-up effect considerably, so that there are no detrimental mental health effects in these groups. In fact, among men, leaving a problematic relationship is beneficial. The relative effect of relationship problems is very similar to the first model, leading to a 1.42 reduction in the effect of a break-up for a two-standard deviation increase in prior relationship problems. Thus, the effect of role stress on the impact of relationship dissolution on distress holds in both married and unmarried relationships.

Later Life Transitions

Table 4 presents results for three transitions that typically occur later in life: retirement, widowhood, and a child moving out of the house. Retirement is a scheduled event, unlike the previous events. Of a sample of 120 full-time workers 55 and over in 1977, 95 retired by 1981. The model predicts a reduced effect of retirement on distress contingent upon previous work problems. The final model for retirement takes into account a two-way interaction between retirement and income in 1981. A three-way

Table 4. Adjusted Mean Difference in 1981 Distress Symptoms due to Later Life Transitions, by Level of Prior Role Problems and Additional Factors

Transition and Additional Modifying Factors	Work Problems		Effect Difference
	Low	High	
Retirement			
<i>Men:</i>			
Income = \$5,000	.89	-4.63***	-5.52*
Income = \$19,000	1.67	-3.85**	-5.52*
Income = \$33,000	2.46	-3.06*	-5.52*
<i>Women:</i>			
Income = \$5,000	-.20	-.92†	-.72
Income = \$19,000	.58	-.14	-.72
Income = \$33,000	1.37	.65	-.72
Widowhood			
<i>Men with confidant</i>			
	-.05	-.75	-.70†
<i>Women without confidant</i>			
	5.14***	4.44**	-.70†
<i>Women with confidant</i>			
	.63	-.07	-.70†
Child Moving Out			
<i>Parental Problems</i>			
	Low	High	
	.44**	-.06	-.50*

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Note: The number of cases for retirement are: men = 64 and women = 31; for widowhood: men with confidant = 8, women without confidant = 4, women with confidant = 13; for a child moving out, 234 out of 874 parents. As in previous tables, points on role problem scales are one standard deviation below and above the mean.

interaction between retirement, work problems, and gender indicated a strong effect of work problems on the impact of retirement among men, but little effect among women. Results show that two work problems (the difference between low and high) reduce the effect of retirement by 5.52 symptoms among men—the largest single effect for any event studied. At average income levels (\$19,000), for instance, retirement after a job with low stress resulted in a 1.67 increase in symptoms, while retirement after a job with high stress resulted in 3.85 fewer symptoms compared to non-retirees. This pattern among men suggests the full manifestation

of a cathartic effect: a detrimental effect in the low work stress group is transformed into a clearly positive effect on mental health in the group with high work stress. These results also suggest that retirement is less of a problem and more a relief from ongoing work stressors. Hypotheses about the importance of loss of identity and status do not seem to be borne out by the size and direction of effects.

The effect of prior marital problems on the impact of widowhood on distress is shown in the second panel of Table 4. Twenty-five people experienced the death of a spouse over the period of study. The effect of social support after the death is clearly evident: a very strong two-way interaction between widowhood and having a confidant reduced the effect of widowhood to nonsignificance.¹⁴ There was, in addition, a marginally significant two-way interaction between widowhood and previous marital problems in the predicted direction. Results show a .70 reduction in the effect of widowhood on distress symptoms comparing those with high vs. low marital problems. This means that, regardless of the presence of a current confidant, a problematic marriage reduces the distress and grief felt after a spouse's death.

Finally, an analysis of the effect of a child moving out of the house in relation to previous problems with the parental role indicates that parents who enjoyed their children suffer a moderate increase in symptoms when a child moves away. But when there are problems with the parental role, the effect on distress vanishes.

All three later-life transitions support the basic hypothesis: Although these events vary from the major life event of death of a spouse to the rather minor event of a child moving out of the house, there is evidence of a stress-relief effect in each case.

"Positive" Transitions

If role problems dampen the effect of "negative" life transitions, then they may also dampen the beneficial effect of "positive" transitions. To test this idea, three events were analyzed: getting married, having another child, (second or later children are studied so that information

¹⁴ The strength of the effect of having a confidant is difficult to judge, since there were no widowers without a confidant and only four widows without a confidant. Among those four widows, however, symptom increases are uniformly high.

Table 5. Adjusted Mean Difference in 1981 Distress Symptoms due to "Positive" Transitions, by Level of Prior Role Problems

Transition	Relationship Problems		Effect Difference
	Low	High	
Getting married			
Men	-.18	-1.08	.90
Women	-1.95**	.07	2.02*
Parental Problems			
	Low	High	
Having another child	.43†	-.31	-.74†
Work Problems			
	Low	High	
Job promotion	-.08	-.14	-.06

† $p < .10$ * $p < .05$ ** $p < .01$

Note: In the relationships sample, the number who got married is men = 7, women = 23. Of 1183 parents, 79 had another child. There were 313 job promotions among 930 workers. Low and high points on role problem scales are one standard deviation below and above the mean respectively.

about parental problems is available), and getting a job promotion. If these are "positive" events, we should observe negative effects of these transitions on distress when there are few prior role problems and smaller reductions in distress or even increases when there are many role problems. Table 5 reports the results for the three events.

There were 30 marriages in a sample of 120 relationships existing in 1977.¹⁵ There was a three-way interaction between marriage, previous relationship problems, and gender, indicating support of the hypothesis among women. Only 7 men are included in the marriage group in these results. Among women in low stress relationships, those who married had 1.95 fewer distress symptoms than those not marrying, but there were no mental health benefits to marriage when the relationship had problems.

Having another child produces anomalous results. Among parents with few parental role problems, those having a child had .43 more symptoms than those who did not have a child.

¹⁵ The number of cases here is larger than in the previous analysis of break-ups because of fewer controls in the final model for the effect of marriage, resulting in fewer deletions of cases with missing data.

Problems with the parental role led to a reduction of this negative impact on mental health. One would expect that having another child when parental role problems already exist would lead to further distress, not less distress. Thus, these findings are not consistent with the general hypothesis.

Job promotion produced no effects on mental health, regardless of work problems. The reason may be the prevalence of job promotions (313 in a sample of 930) and their ritualistic meaning in a high proportion of cases. Some promotions are automatic and do not depend on individual performance. This may undermine the relevance of work problems to the effect of promotions.

DISCUSSION

Previous approaches to the stress of life transitions have either emphasized coping resources that mitigate the impact of an event or the "trait" characteristics of an event that determine its stressfulness. These approaches assume implicitly that the stressfulness of the event either enters as a universal or resides in the characteristics of the event itself.

The approach in this paper demonstrates that factors in the role history prior to the life transition have a major impact on its stressfulness. The stress potential of an event is neither an inherent characteristic of the event nor a result of "coping" strategies, but instead is a product of the social environment prior to the occurrence of the transition.¹⁶

The guiding premise is that chronic role stress at the time of an event, both as a feature of the social environment and as a reflection of past role history, plays a basic and substantial role. The major hypothesis is that role stress alleviates the impact of otherwise stressful transition experiences, as well as dampens the benefits of positive transitions. Across a total of nine events, six "negative" and three "positive," four clearly scheduled and the other five less clearly scheduled, six "major" events (divorce, job loss, retirement, widowhood, marriage, and having another child) and three "minor" events (premarital break-ups, child moving out, and job promotion), some typical of later stages of the

¹⁶ There are other features of the prior social environment one might consider, such as structural aspects of social support, and a full contextual approach should include these factors as well.

Table 6. Patterns of Support for the Stress-Relief Hypothesis for Nine Events.

Event	Pattern of Support			Support Restricted to:
	General	Qualified	None	
1. a) Earlier divorce	×			
b) Recent divorce		×		Married working women
2. Pre-marital breakup	×			
3. Job loss		×		Unmarried men Older married men Younger married women
4. Retirement		×		Men
5. Widowhood	×			
6. Child moving out	×			
7. Getting married		×		Women
8. Having a child			×	
9. Job promotion			×	

life course, others more typical of early stages, there was evidence consistent with the basic hypothesis in seven cases. On the whole, then, results indicate the need for a contextual approach in the study of life transitions.

At the same time, there were differences among events in patterns of support for the stress-relief effect. Table 6 reviews the evidence in terms of general, qualified, and absence of support. Retaining the distinction between earlier and later divorce, there are four cases of general support and four cases of qualified support. Only two events produced no support for the hypothesis — having another child and job promotion. The pattern of support by gender is interesting. Consistent with Thoits' (1987) identity theory in which the importance of a role depends on its identity salience, work-related stress has more contextual relevance for men experiencing job loss or retirement, whereas relationship stress has more contextual relevance for women experiencing the interpersonal role events of recent divorce and marriage. This suggests a three-way conditional model in which identity salience is a further condition of the transition impact.

Support for the predicted effect across very different types of transitions has implications for the present approach. First, the effect of prior role stress operates independently of trait effects, since some trait differences are captured by the variation in the events studied. Indeed, trait effects can be seen in these data: major

events generally have larger effects than minor events, and unscheduled events generally have larger negative effects than scheduled events.

Second, the effect of prior role stress on the impact of life transitions on distress is not just a reflection of the effects of choice since most of the events studied exclude choice. For example, job losses are only counted when involuntary, retirement is an inevitability in most cases, and, one hopes, choice never enters into the death of a spouse. Moreover, the notion that chronic role stress leads to or is highly related to event occurrence, even when the event has a volitional component, is not substantiated in these data. The highest correlation between any of the role problem measures and an event was .19 in the case of relationship problems and eventual breakup, and this is clearly one of the events influenced by choice considerations. The average correlation between role problems and events was .09, indicating the complexity of event occurrence.

Finally, the model provides an interpretive framework that can be applied to a wide range of individual events to aid in understanding differential responses to a given event. The range of impacts explained by the model in this paper is considerable, including not only the difference between substantial negative effects on mental health and no effect, but also positive benefits to mental health as well.

It is this picture of the "stressor" as nonstressful that is the basic message of these results.

When life transitions occur in the context of a problematic role history, it is misleading to refer to the transition event as a "stressor." Rather, there are times when removal from a difficult situation, via divorce or retirement or an unforeseen job loss, may be appropriate and what is needed.

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Appendix. Role Problem Measures

Marital Problems

1. Absence of love shown by spouse.
2. Spouse not interested in what you do or say.
3. Spouse doesn't help enough around the house.
4. Spouse doesn't spend enough time at home.
5. Don't like the way that spouse deals with the children.
6. Marital dissatisfaction.
7. Marriage limits freedom.
8. Marriage does not satisfy needs for companionship.
9. Marriage does not satisfy sexual needs.

Work Problems

1. Excessive overtime work.
2. Work unpredictable hours.
3. Both mentally and physically tired after work.
4. Supervisor monitors work more than twice a day.
5. Work is boring.
6. "Dead-end" job.
7. Pace of work regulated by equipment.
8. Live too far (> 45 minutes) from work.
9. Physical surroundings at work unpleasant.
10. Job does not have security.
11. The pay is not good.
12. Job interferes with the rest of life.

Relationship Problems

1. Absence of affection from friend.
2. Friend not interested in what you do.
3. Not enough time spent together.
4. Friend doesn't help you with things.
5. Dissatisfaction with relationship.

6. Relationship limits freedom.
7. Relationship doesn't satisfy needs for friendship.
8. Relationship doesn't satisfy sexual needs.
9. If I had to do it over, I wouldn't have got involved.

Parental Problems

1. Dissatisfied with the way children are growing up.
2. Being a parent is hardly ever enjoyable.
3. Children not living up to hopes and expectations.
4. Being a parent limits freedom.

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THE TIMING OF A FIRST BIRTH AND HIGH SCHOOL COMPLETION*

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The relationship between the timing of a first birth and high school completion among women is examined using data from the National Longitudinal Survey of Youth. Employing event-history techniques, we find that a first birth influences eventual high school graduation, but not in the way previous studies have suggested. Using a modified status attainment model incorporating a life-course perspective, we find that having a baby does not predict dropping out of high school. Women who have a baby while still enrolled in school and remain in school are just as likely to graduate as women who do not. Among high school dropouts, however, a birth reduces the chances of eventual graduation. Policy and theoretical considerations are discussed.

One of the more controversial issues in recent research on adolescent childbearing is the effect of such fertility on a young woman's educational attainment. Although it is accepted that young mothers are less likely to graduate from high school than women who postpone childbearing, it is clear that socioeconomic background influences both early childbearing and high school graduation (Furstenberg 1976; Card and Wise 1978; Moore, Waite, Caldwell, and Hofferth 1978). Many studies on the educational consequences of adolescent childbearing have included socioeconomic background factors as control variables, and several come to different conclusions about the net effect of adolescent childbearing on graduation (Hofferth and Moore 1979; Rindfuss, Bumpass, and St. John 1980; Koo and Bilsborrow 1979; Marini 1984). An important source of these differences is the nature of the conceptual models and analytic methods used in the studies (Hofferth 1984; Rindfuss, St. John, and Bumpass 1984) including two-stage least squares methods that require strong theoretical assumptions about causal relationships.

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This paper advances our understanding of the association between adolescent childbearing and high school graduation by examining in considerable detail the relative timing of having a baby, dropping out of high school, and high school graduation. Several studies provide descriptions of the timing of some or all of these events (Moore et al. 1978; Mott and Shaw 1978; Mott and Marsiglio 1985), but no study provides information on the timing of events while considering the effect of relevant socioeconomic factors on the association between childbearing and high school graduation. We consider the precise timing of events we are studying by applying analytical methods that make full use of fertility and schooling histories while allowing us to simultaneously consider the influence of socioeconomic background factors. Although the temporal order of events is not sufficient to establish causal sequencing (Marini and Singer 1988), it does provide a rich elaboration of how women become mothers, drop out of school, and graduate.

Our analysis focuses on a cohort of young women who have recently passed through adolescence. Because of changes in legislation and public policy, the context in which these women experienced childbirth is quite different from what their counterparts in earlier cohorts experienced. For example, the enactment of Title IX of the Educational Act of 1972 made it illegal for schools receiving federal funding to expel students because of pregnancy or parenthood. In addition, changing marital patterns and more tolerant social norms have made adolescent childbearing less socially stigmatizing.

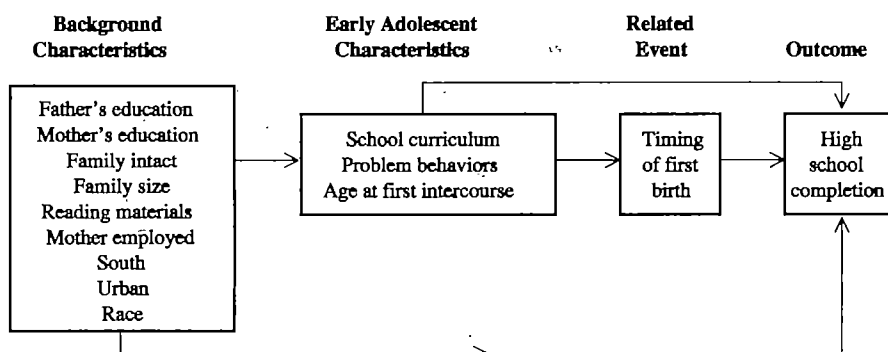


Figure 1. Conceptual Framework: The Determinants of High School Completion

CONCEPTUAL FRAMEWORK

Figure 1 illustrates the conceptual framework guiding our analysis. No single theoretical orientation adequately explains the relationship between childbearing and schooling. While a status attainment approach, reflected in "Background Characteristics," is a logical starting point, it was originally developed to examine the educational opportunities of men. Early applications of these models revealed significant gender interactions (Sewell and Shah 1967, 1968a, 1968b), prompting others to suggest that to understand the educational attainment of women it was necessary to move outside the status attainment framework and include fertility-related variables (Alexander and Eckland 1974; Marini 1978). The major fertility-related variable is the occurrence of a first birth. A second variable associated with early fertility, age at first intercourse is included in "Early Adolescent Characteristics." Since the process of educational attainment occurs over many years, factors important for one segment of schooling may be less salient for other segments. Other variables known to be associated both with high school graduation and with a general academic orientation are included in this category (Pallas 1984; Mensch and Kandel 1988). The mean and standard deviation of each variable are presented in the Appendix.

The Outcome Variable: High School Graduation

The portion of schooling that is most affected by an adolescent birth is high school. High school graduation is a measure of minimal educational attainment that is also important conceptually since failure to complete high

school precludes attendance in post-secondary schooling and some types of vocational training, and limits employment opportunities (Morgan 1984). Our measure of high school graduation includes both regular schooling and GED program completion.

Background Characteristics

The first set of covariates characterizes a woman's family of origin. Family background variables, measured when the respondent was age 14, are parents' education, number of siblings, family intactness, mother's labor force participation, location of residence, and the availability of reading materials in the home. Parents with high educational levels reflect not only a high socioeconomic status through which more economic resources can be diverted to the child and her education, but an increased ability and motivation to provide educational resources (Howell and Frese 1982; Rumberger 1983). Large family size suggests increased economic pressures and parental time constraints (Mare 1980). An intact family has more resources available for the child's education. Two measures of residence are included: Southern residence, since educational attainment is relatively lower in the South, and urban residence, since educational attainment is relatively higher in urban areas (U.S. Bureau of the Census 1987).

The availability of reading materials in the home is a measure of the educational resources accessible to the young woman as well as an indication of the importance placed on educational endeavors by the family (Rumberger 1983; Moore et al. 1978). Whether the respondent's mother was employed outside the home is an additional measure of family socio-

economic status. Since a large percentage of black women are from female-headed single parent households, this variable takes into account the relative socioeconomic differences of single parent families as well as differences in family structure by race.¹ A final variable indicates the respondent's racial/ethnic background — white, black, or Hispanic.

Adolescent Characteristics

The second set of variables in the model represents the experiences and environment of the woman during adolescence, including school curriculum, "problem behaviors," and timing of sexual debut. The type of school curriculum followed during secondary school is an indirect indication of a woman's prior academic performance, her school environment, and her scholastic aspirations (Alexander and Eckland 1975).

Drawing from the work of Jessor and Jessor (1977) on the role of "problem behaviors" in adolescence and their consequences, we measure both drinking alcohol and smoking before age 16. These behaviors serve as indicators of the social context within which adolescents live (Ensminger 1987) and suggest less commitment to academic pursuits, particularly when exhibited at relatively young ages (Mensch and Kandel 1988).

The last variable is fertility-related: age at first intercourse.² Early sexual activity (under age 16) indicates a breaking away from parental authority and possibly less commitment to school (Pallas 1984; Jessor and Jessor 1977).

Timing of the First Birth

The impact of a first birth on a woman's life has usually been measured as an age-specific effect, with an early birth hypothesized to be the source of subsequent social pathologies (Cu-

tright 1973). Other researchers adopt a less structured perspective, emphasizing the importance of examining the effects of a birth in the context of the woman's current life situation (Elder 1984; Hogan and Astone 1986; Rindfuss, Swicegood, and Rosenfeld 1987). Drawing from the latter approach, we refer to a woman's first birth as the "timing of the first birth" rather than "age at first birth" to indicate our interest not only in the absolute age at which a woman starts childbearing but also the timing of a birth relative to schooling.

DATA

The data are from the National Longitudinal Survey of Youth (NLSY), a nationally representative sample of over 12,000 U.S. men and women ages 14-21 who were initially interviewed in 1979 and have been reinterviewed annually. Blacks, Hispanics, and disadvantaged whites are oversampled. Respondent retention rates are good; almost 92 percent of the original 1979 panel was reinterviewed in 1986 (Center for Human Resource Research 1987). The NLSY contains complete fertility histories, the date of high school graduation, date of any drop out, and extensive background and adolescent characteristics. Event-history records were constructed for every woman interviewed in the 1986 panel who had complete fertility and schooling histories. In 1986, 5,419 of the original 6,284 women were reinterviewed, of whom 5,347 had complete schooling and fertility histories.³ High school completion and fertility experiences are measured as of 1986 when the respondents were ages 21-29. Two event-history techniques are employed. A series of competing-risk life tables is computed, followed by two multivariate analyses utilizing a stratified proportional hazard model with time-varying covariates.

debate over whether marriage belongs in the model, and the unfortunate crudeness of our measure of marriage, we exclude it from our conceptual framework. We do, however, report our findings with marriage both excluded and included.

³ It was necessary to reconstruct schooling histories using school progression information (i.e., grade enrolled as of May 1 of each survey year) for 272 of the 5,419 cases. In all but 72 of these cases, it was possible to reconstruct the school histories. Most of the 72 women for whom schooling histories could not be obtained had completed high school prior to the first survey date (1979).

¹ To further account for family structure differences by race, a variable is included in the analysis which measures whether the educational attainment of the woman's father was reported. A woman who grew up in a single parent household with her mother may not know the education of her father and consequently her father's level of education may not be an important determinant of her own.

² In the original formulation of our conceptual model, we included marriage as an additional fertility-related variable, following the findings of prior research (Moore et al. 1978). Since there is some

Table 1. Percentage of Women Completing High School by Age at First Birth and Race

Race/Ethnicity	Age at First Birth				No birth	Total
	≤17	18-19	20-24	25-29		
All Women	54.5	73.3	89.7	95.5	95.5	88.2
White	53.7	74.4	90.4	96.0	96.5	90.3
Black	60.6	75.3	92.7	96.8	92.8	82.7
Hispanic	36.6	61.4	75.9	86.8	90.1	74.3

Note: Percentages have been weighted using 1986 case weights.

RESULTS

Table 1 demonstrates the familiar relationship between fertility and high school graduation among recent cohorts of women. For each race/ethnic group, a clear-cut gradient is evident—the younger the woman at first birth, the lower the percent who had graduated by 1986.

Figure 2 establishes how the sequence of dropping out of school and having a baby affects the proportions graduating from high school. We first observe women at age 14 who were enrolled in school and had not yet had a baby. They are followed each month and their transitions to new states are recorded. Three specific events are monitored: a first birth, the first episode of dropping out of school, and high school graduation.⁴ High school graduation is the terminal event—women leave the analysis once they have graduated. The transition probabilities displayed are based on a series of competing risk life-tables and are the cumulative event-specific probabilities for each transition, weighted to national estimates. Exposure to the risk of the second and third transitions is conditioned on a woman's prior experience, e.g., women who dropped out of school first were then exposed to the risk of having a baby or graduating. All women in the sample experienced at least one transition.

The majority of women progressed directly to high school graduation without either a birth or dropping out (probability = .772). Dropping out of school was the next most common first

transition (probability = .178), with only a small proportion of women having a baby while still enrolled in school (probability = .05). Dropouts were more likely to have a baby as their second transition than to graduate, whereas women who became mothers while enrolled in school were substantially more likely to graduate than to drop out of school. Among women who both had a baby and dropped out of school, the probability of eventually graduating was virtually identical regardless of the order of events (probabilities of .294 and .299). However, the probabilities of the third transition alone do not describe the entire effect of a birth on eventual graduation. Among women who became mothers while enrolled in school, the combined transition probability of eventually graduating was very similar to women who progressed straight through school without any intervening events (.726 for mothers compared with .772 for women whose first event was graduation).⁵ Among dropouts, those who became mothers after dropping out had a probability of eventually graduating from school of .294, compared to .284 for women who *did not* have a baby. Apparently, a birth after dropping out of school has little effect on the probability of a dropout eventually graduating.

When this analysis is done separately by race/ethnic group, the same general transition patterns remain (data not shown). White women are most likely to graduate as their first event followed by blacks and Hispanics. Black women are substantially more likely to have a baby

⁴ A high school dropout episode is defined as one in which schooling was disrupted for at least one month (excluding summer vacations). Although it is possible for women to have multiple episodes of dropping out and returns to school, we focus on the first dropout episode since only a few women dropped out more than once and we were concerned about data quality after the first dropout.

⁵ Among those who had a birth while in school, let $P(C)$ equal the probability of graduating without dropping out, let $P(A)$ equal the probability of dropping out, and let $P(B|A)$ equal the probability of graduating given school drop out. Then, the probability of eventually graduating for women who had a baby while in school is $P(C) + P(A)P(B|A) = .609 + (.391)(.299) = .726$.

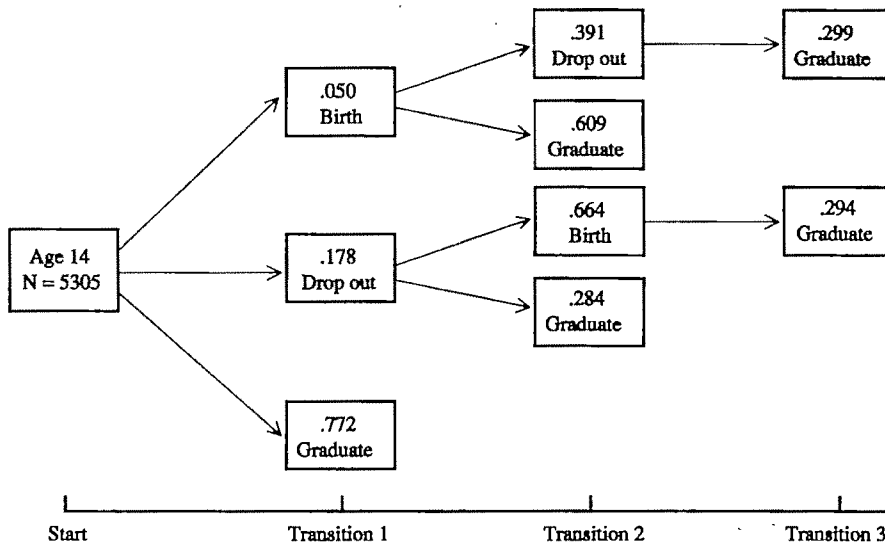


Figure 2. Transition Probabilities for Giving Birth, Graduating, and Dropping Out of School

while enrolled in school (.174) than either whites (.026) or Hispanics (.060) while Hispanic women are much more likely to drop out as their first event than either whites or blacks. For each race/ethnic group, women who had a baby while in school were more likely to graduate than to drop out of school. This relationship was strongest for white women, followed by Hispanics and blacks. Among dropouts, all groups are more likely to have a baby than to graduate as their second event, with probabilities highest for Hispanics followed by blacks and then whites. For women who both dropped out and had a baby, the relative ordering of these two events appeared to make little difference on the probability of graduating. For all race/ethnic groups, women who had a baby while enrolled in school are no less likely to eventually graduate than women who progressed straight through to graduation.

These results suggest that timing of a birth in the schooling process has little impact on the probability of eventually graduating but that dropping out of school has a substantial impact. Women who manage to remain in school when they become mothers fare just as well as women who progress straight through without dropping out or having a baby. In contrast, women who drop out, with or without a birth, have great difficulty returning to school and graduating.

The above analysis does not take into account factors beyond childbirth and dropping

out that are important in explaining the processes of childbearing and schooling. We turn now to a multivariate survival analysis using the proportional hazard model first described by Cox (1972), stratified to allow for time-varying covariates (Breslow 1978). We divide the process into two segments: from age 14 to the first (if any) episode of dropping out of school; and from the time of first dropout episode to eventual high school graduation.⁶ For each schooling interval, we consider the effect of other variables included in our conceptual framework. The effect is measured in two ways. First, a birth is measured as a time-varying covariate, i.e., its value is allowed to change over the schooling intervals of interest. For example, women who had a baby between age 14 and dropping out (or censoring) are coded "0" for each monthly interval prior to giving birth and then are coded "1" for each subsequent month; women who did not have a baby are coded "0" throughout the schooling time interval. In this way, women who have a baby at any specified time after age 14 are compared with their childless counterparts at that same time.

Although the value of a time-varying covariate changes for individuals in the sample, a

⁶ We include both GED and regular school completion as high school graduation. In the NLSY, approximately 6 percent of women completed high school through GED programs, and this percentage increased the younger the age at first birth.

single coefficient for having a baby is estimated, implying that the effect of having a baby on schooling does not change relative to when in the interval the baby is born. This is a serious limitation. For example, the association between school-age childbearing and high school graduation may differ by age — a 14-year old mother's educational prospects may be quite different from those of a 17-year old mother. To capture these potential effects, we include a variable that measures the extent to which the birth variable interacts with time, i.e., the extent to which the *effects* of a first birth change over the time intervals.

The inclusion of a time-varying covariate as well as covariates that interact with time require substantial data modifications. For example, the unit of observation becomes woman-months of school exposure rather than individual women. Modifying the data in this way dramatically increases the number of observations such that the total number of observations is too large for a conventional analysis. To reduce the number of observations to a manageable size, samples of observations are taken at each time interval, following established procedures (Breslow, Lubin, Marek, and Langholz 1983). The principles underlying the sampling approach are similar to case-control methods developed by epidemiologists. At each time interval, all the "cases" (individuals who experience the outcome event at that time) are selected, along with a small number of randomly selected "controls" (individuals who have not yet experienced the outcome event). No more than four or five controls are required per case to allow estimation of unbiased coefficients that describe the effect of each of the independent variables (Mantel 1973). While this approach provides unbiased estimates of the relative risk of experiencing the outcome event, it cannot provide an estimate of the underlying hazard of the outcome event. That is, we can estimate the relative difference in dropping out of high school between women who have a baby and those who do not, but we cannot estimate the overall risk of dropping out for either group.

First Schooling Segment: Age 14 to School Drop Out

Table 2 shows the results of a stratified proportional hazard analysis for dropping out of high school. The second column of the table presents the beta coefficients and their standard er-

Table 2. Effects of a Birth and Other Characteristics Predicting Time to High School Drop Out From Age 14

Characteristics	Relative Risk	Beta (S.E.)
Time to birth ^a	.700	-.357 (.327)
Birth-time interaction ^b	1.014	.014* (.007)
Father's education missing	1.004	-.004 (.091)
Father's education ≥ 12	.845	-.169* (.080)
Mother's education ≥ 12	.650	-.430** (.077)
Family intact	.821	-.197** (.069)
Number of siblings ≥ 3	1.150	.140 (.075)
Reading materials ≥ 2	.808	-.213** (.069)
Mother employed	.959	-.042 (.064)
South	1.046	.045 (.070)
Urban	1.075	.072 (.081)
College preparatory	.427	-.850** (.114)
Problems ≥ 1	1.260	.231** (.070)
Sexual debut ≤ 15	1.707	.535** (.070)
Black	.778	-.251** (.087)
Hispanic	1.143	.134 (.086)
-2 log likelihood		7987.42
χ^2		414.29**
d.f.		16
N	3646	
Number of events	1059	
Number censored	2587	

* $p < .05$ ** $p < .01$

^a Time-varying covariate.

^b Interaction of time to birth with time.

rors for each covariate. The first column contains the antilog of these coefficients, which are interpreted as relative risks comparing one category of a covariate with its omitted category. Models were run separately for the three race/ethnic groups, but since there were no substantial differences the groups were combined and a main effects model for race is presented.

In general, the coefficients (and their corresponding relative risks) are in the expected direction and the model is highly significant in

explaining the total variation. The major finding is that a birth to a woman enrolled in school is not predictive of her subsequent drop out. When a birth is measured as a time-varying covariate, it has little effect on the risk of dropping out of school. Although not significant ($p = .275$), for any given time t between age 14 and dropping out, a woman who had a birth was .700 less likely to drop out than a woman who, at that same time t , had not yet had a baby. However, a woman who had a baby later in the interval was more likely to drop out than a woman who had a baby earlier in the interval ($p = .043$).⁷

Four background factors have a significant effect on a woman's risk of dropping out of school. Women who grew up in homes where there were two or more types of reading materials (newspapers, magazines, library books) available were 20 percent less likely to drop out of high school. Women from intact families were 18 percent less likely to drop out of school than women whose families were not intact. Women whose mothers had 12 or more years of school were one-third less likely to drop out than women whose mothers had less education. Finally, women whose fathers had 12 or more years of school were 15 percent less likely to drop out.

Early adolescent characteristics are very important in determining whether a woman drops out of high school. Women who experience an early sexual debut are 70 percent more likely to drop out of school than women who do not. Women who began smoking or drinking before age 16 are 26 percent more likely to drop out of school. On the other hand, women enrolled in a college preparatory program are substantially less likely to drop out of school than women enrolled in other types of academic programs. After controlling for background and adolescent factors, blacks are significantly less likely to drop out than whites.

Overall, these findings support prior research on the determinants of high school drop out. Women from families with less educational focus or whose parents had less education were more likely to drop out of school. Women who

were already of higher academic ability, who delayed sexual intercourse and who did not drink alcohol or smoke at a young age were significantly less likely to drop out of school.

However, one finding is not supported uniformly by prior research: among women exposed to the risk of dropping out, having a baby during this segment of their schooling does not significantly increase their chances of dropping out of school. It does appear that the older a woman is when she becomes a mother, the more likely she is to drop out of school.⁸

Second Schooling Segment: Drop Out to Graduation

The final analysis measures the risk of eventually graduating from high school, given that the woman has dropped out of school, i.e., survival times are measured from drop out date to graduation date. This analysis is restricted to women who experienced a drop out. The conceptual model is identical to the previous model, except that two dichotomous variables are added: a variable indicating whether a woman had a baby before dropping out of school and a variable indicating the age at which a woman dropped out (under age 16 or age 16 and older) of school.

Table 3 presents results of the hazard model for the second schooling segment. While almost all of the relative risks were in the expected direction, the model is less successful in predicting eventual graduation than for predicting dropping out. In this second segment of schooling, significant effects of a birth are observed. Women who had a baby at any time after dropping out of school were only half as likely to eventually graduate as women who

⁷ In an earlier model that included marriage, neither birth variable was significant, and the coefficients were similar. The marriage variable was highly significant ($\beta = .490, p < .01$). Since older mothers are more likely to marry, we suspect this is why the above findings are slightly different.

⁸ To examine the possibility that pregnant women drop out of school before their baby is born, we also carried out the analysis by defining the "first birth" variable as the "estimated month of conception that led to the first birth," rather than as "date of first birth." The results were unchanged. Evidence on the extent of such "anticipatory dropouts" is also available from the distributions of the timing of births following the first drop out. Figure 2 shows the cumulative probability of having a baby after dropping out, but the life tables that produced these cumulative rates also include month-by-month probabilities. These probabilities show that the majority of dropouts who have babies do so more than nine months after dropping out, suggesting they did not drop out because of an impending birth.

did not have a baby at that same time (see the "time to birth" variable). Women who had a baby prior to dropping out of school were less likely to graduate than women who did not have a baby prior to dropping out. In addition, women who became mothers later in the interval were slightly more likely (relative risk = 1.009) to graduate.⁹ These findings suggest that once a woman becomes a dropout, becoming a mother hinders her eventual completion of school.¹⁰

The educational levels of both parents were significant predictors of high school graduation among dropouts; dropouts whose parents had 12 or more years of school were one-third more likely to graduate than dropouts whose parents had less than 12 years of school. Only one adolescent variable significantly predicted high school graduation among dropouts: women who attended a college preparatory curriculum were over one and one-half times more likely to return to school and graduate than women who attended other types of programs prior to dropping out. Neither the age at which a woman dropped out or her race influence the chances of graduating, net of other factors.

DISCUSSION AND CONCLUSIONS

Consistent with some previous work, we find that adolescent childbearing does not always lead to educational deprivation (Furstenberg, Brooks-Gunn, and Morgan 1987). The majority of adolescents who had a baby while still in school went on to graduate from high school in the same percentages as women who went straight through high school without dropping out or having a baby. Second, net of background and personal characteristics, having a child while enrolled in school does not significantly increase the risk of dropping out of school, although it appears that older mothers are more likely to drop out (because they are also more likely to get married). Our findings also suggest that pregnant young women do not drop out in anticipation of impending motherhood. Third, among those who drop out of school, having a baby reduces their chances of eventual graduation.

Our overall conclusion is that birth has an effect on high school graduation, but not in the

⁹ When marriage is included in the model only the "time to birth" variable was significant ($\beta = -.645$, $p < .01$) and the effects of the other two birth variables remained similar, but not significant.

¹⁰ To more directly address the question of whether

Table 3. Effects of a Birth and Other Characteristics Predicting Time to Graduation Among Dropouts

Characteristics	Relative Risk	Beta (S.E.)
Birth before drop out ^a	.668	-.403* (.191)
Time to birth ^b	.506	-.682** (.228)
Birth-time interaction ^a	1.009	.009* (.005)
Father's education missing	1.041	.040 (.161)
Father's education ≥ 12	1.343	.295* (.124)
Mother's education ≥ 12	1.377	.320** (.118)
Family intact	1.126	.119 (.115)
Number of siblings ≥ 3	.827	-.118 (.322)
Reading materials ≥ 2	1.161	.149 (.120)
Mother employed	1.183	.168 (.107)
South	1.099	.094 (.117)
Urban	.942	-.060 (.141)
College preparatory	1.523	.421** (.158)
Problems ≥ 1	1.080	.077 (.125)
Sexual debut ≤ 15	1.075	.072 (.116)
Age at drop out	1.037	.036 (.046)
Black	1.011	-.011 (.149)
Hispanic	.956	-.048 (.151)
-2 log likelihood		2404.70
χ^2		60.96**
d.f.		18
N	1911	
Number of events	392	
Number censored	1519	

* $p < .05$ ** $p < .01$

^a Dichotomous variable indicating whether a first birth occurred prior to school drop out.

^b Time-varying covariate.

^c Interaction of time to birth with time.

pregnant women drop out of school in anticipation of an impending birth, we included a birth variable indicating whether a woman had a birth within seven months after dropping out of school. This variable was not significant.

way that most previous studies have assumed. Because we were able to examine the childbearing/schooling association in detail, we conclude that the effect exists not because young mothers are more likely to drop out of school, but because among those who drop out, for whatever reason, those with children are less likely to return to school and graduate.

Institutional and societal changes may have weakened or changed the relationship between adolescent childbearing and school-leaving in recent years. A greater proportion of school-age mothers complete high school now than in the past (Upchurch and McCarthy 1989). While we cannot generalize our findings to earlier cohorts of adolescent mothers, they suggest a somewhat different outcome for adolescent mothers today. Our research also suggests a need to develop a more general theoretical perspective on the timing of fertility, incorporating potential social advantages for "early" childbearing among some groups of women (Rindfuss et al. 1987; Geronimus 1987).

Variables other than those associated with childbearing are significant at both stages of the schooling process. The underlying assumption in many public policies and programs for adolescents is that young mothers would fare as well as their childless counterparts if only they would delay their first birth. Our results suggest this may be a serious oversimplification. First, many young mothers do not have children until long after they have left school, a situation that makes it difficult to ascribe poor educational outcomes to early fertility. Second, factors other than fertility, such as early sexual debut and problem behaviors are also strong

predictors of school drop out. Among women who drop out, family background characteristics are significant predictors of returning and graduating. Overall, our model was less successful in predicting high school graduation among dropouts. We suspect that the life situation a woman experiences after she drops out is important in determining her return. Additional research is needed to examine the effects of changes in family structure, household composition, and a woman's employment experiences as a dropout. These factors may be as important as a birth in predicting eventual school completion. Finally, type of high school curriculum is a significant predictor over both schooling intervals.

Clearly, a number of other social and personal characteristics, in addition to early fertility, are important factors in understanding high school graduation, and simply altering the fertility patterns may not have large effects on the social and economic well-being of young mothers.

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Appendix. Definitions, Means, and Standard Deviations of Variables By Race

Variables	Definition	Whites	Blacks	Hispanics
		Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Birth < 18	First birth under age 18 (1 = Yes)	.059 (.236)	.202 (.402)	.117 (.321)
Birth 18-19	First birth between ages 18-19 (1 = Yes)	.098 (.297)	.171 (.376)	.167 (.373)
<i>Background Characteristics</i>				
Father's education	Father's education missing (1 = Yes)	.054 (.225)	.214 (.410)	.144 (.351)
Father's education ≥ 12	Father's education ≥ 12 years (1 = Yes)	.668 (.471)	.385 (.487)	.298 (.457)
Mother's education ≥ 12	Mother's education ≥ 12 years (1 = Yes)	.725 (.447)	.467 (.499)	.281 (.449)

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Variables	Definition	Whites	Blacks	Hispanics
		Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Family intact	Family intact at age 14 (1 = Yes)	.814 (.389)	.528 (.499)	.694 (.461)
Number of siblings ≥ 3	Siblings ≥ 3 (1 = Yes)	.549 (.487)	.722 (.447)	.710 (.453)
Reading materials ≥ 2	Reading materials in home ≥ 2 (1 = Yes)	.861 (.347)	.618 (.486)	.543 (.498)
Mother employed	Mother employed when R was age 14 (1 = Yes)	.529 (.499)	.611 (.487)	.478 (.499)
South	Southern residence at age 14 (1 = Yes)	.289 (.454)	.578 (.494)	.271 (.445)
Urban	Urban residence at age 14 (1 = Yes)	.761 (.426)	.825 (.379)	.878 (.326)
<i>Early Adolescent Characteristics</i>				
College preparatory	Attended college preparatory curriculum (1 = Yes)	.319 (.466)	.285 (.451)	.246 (.431)
Problems ≥ 1	Began smoking or drinking at age 15 or under (1 = Yes)	.608 (.488)	.432 (.495)	.462 (.498)
Sexual debut ≤ 15	First intercourse at age 15 or younger (1 = Yes)	.182 (.386)	.292 (.455)	.182 (.386)
N		3085	1381	839

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EMPTYING THE NEST AND PARENTAL WELL-BEING: AN ANALYSIS OF NATIONAL PANEL DATA*

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Panel data from a national random sample are used to investigate the effects of children leaving home on parental well-being. The "empty nest" is associated with significant improvements in marital happiness for all parents, regardless of parent's or children's characteristics. Overall life satisfaction improves significantly only under two conditions: when there is frequent contact with nonresident children or when there were young teens in the 1983 household. For both measures of parental well-being, the positive effects of the empty nest appear to be strongest immediately after the children leave. These findings, coupled with the high levels of post-launching contact, suggest that while parents experience a modest post-launch honeymoon, the parental role remains important to parental well-being.

The effect of the child-leaving phase of the family life cycle on parental well-being has been the topic of much discussion and several influential studies, but empirical findings are sketchy. Most studies rely on cross-sectional data, and only two studies examine the change in parental well-being associated with launching. We follow a national sample of 402 parents of older children over a four-year period and compare changes in marital happiness and life satisfaction between those who did and did not empty their nest. We also examine whether the effects of the empty nest depend upon the stressfulness of the parental role or amount of post-launch contact.

PREVIOUS WORK

Theoretical Perspectives

Three theoretical perspectives offer hypotheses about the effects of the empty nest: role identity theories, role change theories, and role conflict theories.

Role identity theories derive from the structural school of symbolic interaction. Thoits (1983, p. 183) argues, for example, that "Social identities provide actors with existential meaning and behavioral guidance, and that these qualities are essential to psychological well-

being and organized, functional behavior." According to this perspective, the more roles one has, the better off one is. This perspective predicts that role loss will have negative effects on psychological functioning, suggesting that child-leaving will be associated with decreases in parental well-being. This prediction rests on the questionable premise that launching one's children means exiting the parental role. Generally, scholars working in this tradition reject this premise: respondents are counted as occupying a parental role if they have ever had children (cf. Thoits 1983).

The role change perspective is associated with the work of Holmes and Rahe (1967). Their work, which is the basis of a long research tradition, suggests that any role change (whether addition or deletion) will have negative effects on psychological and physical well-being. This perspective also predicts a negative effect of emptying the nest. Because the negative effect of role change may be short-lived, it may not be observed in a four-year panel.

Finally, a general perspective that we call role stress argues that the effect of change depends on the degree of conflict and stress associated with the role (Barnett and Baruch 1985). If there is role strain or role conflict, loss of the role may be beneficial. Because several studies find that parenthood is a stressful role (McLanahan and Adams 1987), this perspective suggests that the empty nest should lead to improvements in parental well-being.

The sociological literature on launching has generally used some form of role identity or role

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stress theory. The "empty nest syndrome" of early work is clearly a form of role identity theory: loss of a major role brings alienation, dissatisfaction, and loneliness (Phillips 1957). On the other hand, more recent commentators seem to assume that parenthood is a stressful role, and that its loss should bring relief (Glenn 1975; Miller and Myers-Walls 1983).

Empirical Findings

Although two early clinical studies (Curlee 1969; Bart 1972) report depression following the empty-nest period, most cross-sectional studies of the general population reveal modest positive outcomes (Rollins and Feldman 1970; Deutscher 1973; Glenn 1975; Harkins 1978; Campbell 1981).

Several studies use the family life cycle approach of grouping a cross-sectional sample into four or five categories that correspond roughly to stages of family development. Most of these studies report a U-shaped pattern in which marital happiness is highest during the honeymoon stage, lowest when the children are schoolage or teens, and higher when the children are older or gone (Rollins and Feldman 1970; Rollins and Cannon 1974; Anderson, Russell, and Schuman 1983). The effect is rather small, however, and sometimes absent (Spanier, Lewis, Cole 1975).

Studies by Glenn (1975) and Glenn and McLanahan (1982), using national cross-sectional data, show that families with children in the home are generally worse off in terms of global and marital satisfaction than families without children. In support of the argument that parenthood is a generally stressful role, Glenn and McLanahan found no group for whom presence of children was positively correlated with marital satisfaction.

These cross-sectional studies have several drawbacks. In addition to the possibility that the observed relationships are cohort effects (empty-nest parents come from earlier cohorts than parents currently with children in the home), selection biases are possible (Spanier et al. 1975; Schram 1979). A selection effect for presence of children and lower happiness could occur in two ways. First, children slow the divorce process suggesting an overrepresentation of unsatisfactory marriages among families with children in the home (White, Booth, and Edwards 1986). Second, the evidence that children are an important source of satisfaction to people in poor

marriages (Luckey and Bain 1970; Lauer and Lauer 1986) suggests that people in poor marriages may hang on to their children longer. In addition to these general problems of cross-sectional research, the Glenn (1975) and Glenn and McLanahan (1982) studies are hampered by inexact comparisons: Because their data sets only measured presence of children under 18, they were forced to include childless families and families with resident adult children in the post-launch category.

Two studies examine *change* in parental well-being associated with emptying the nest. Both report generally positive effects of completing the launching process. Menaghan (1983), in a sample of 639 Chicagoans interviewed in 1972 and 1976, reports the effects of the empty nest on two measures — an index of marital affection-fulfillment and an index of perceived equity. Comparing 34 respondents whose youngest (last?) child had left home with respondents who were already empty nesters or who still had children in the home, Menaghan concludes that launching the youngest child results in significant improvement in perceived equity but not in affection-fulfillment. Using a larger sample from the Panel Study of Income Dynamics, McLanahan and Sorensen (1985) investigate whether child-leaving changes self-satisfaction (Are you satisfied or dissatisfied with yourself?) between 1968 and 1972. They find that on-time departures (i.e., when parents were over 40) are associated with significant increases in women's self satisfaction but not men's. Off-time departures (i.e., before the parent reached 40) are associated with decreased self-satisfaction for fathers. Because they used the departure of any child rather than the completion of the launching process as their independent variable, McLanahan and Sorensen may have underestimated the effect of emptying the nest on parental well-being.

These two panel studies are milestones in the assessment of the launching process. They provide the first evidence that change in parental status is associated with positive change in parental well-being. Because neither study was designed to tap changes in parental well-being, however, both use dependent variables that relate only indirectly to previous research.

The Issues

We examine the effects of entering and completing the launching process on two indicators

of parental well-being: marital happiness and life satisfaction. We test the hypothesis that launching will have a positive effect on parental well-being and that this effect will be stronger for parents who experience the most stress from parenting.

Previous studies suggest that mothers find parenting more stressful than fathers (McLanahan and Adams 1987), that parents argue more with sons than daughters (Sutor and Pillemer 1988), and that stepchildren cause more family tension than biological children (White and Booth 1985). In addition, we hypothesize that parenting will be more stressful when parents hold nontraditional gender roles or are highly educated. The latter variables have been shown by Goldscheider and Goldscheider (1988) to predict early departure of children from the parental home. Mother's employment and number of children in the household are also included as indicators of parental stress. We test to see whether the effects of launching on parental well-being are modified by these indicators of parental stress. We also include age of youngest child, which acts as a proxy for recency of emptying the nest as well as tapping amount of active parenting required by resident children.

Finally, we test whether the effect of launching depends upon contact with nonresident children. If contact and obligations continue to be high, launching may have little effect on parental well-being.

STUDY DESIGN

Sample

This research is based on a national sample interviewed in 1980 and again in 1983 and 1988. In 1980, telephone interviews were conducted with a random sample of 2,033 married individuals under the age of 55. In 1983, reinterviews were completed with 1,592 individuals of whom 1,331 were interviewed a third time in 1988. Careful analysis shows that the 1983 and 1988 panels are largely representative of the nation's married couples.¹ Because informa-

tion on relationships with nonresident children is available only for the 1988 wave, this study is based on a comparison of the 1983-1988 panel. Analysis is restricted to the 402 respondents who met the following criteria: 1) interviewed in 1983 and 1988; 2) marriage intact between 1983 and 1988; and 3) had at least one child 14 or older in the home in 1983.

Dependent Variables

To maximize comparability with previous literature, we use marital happiness and life satisfaction as dependent variables. Marital happiness is measured by an 11-item summed scale with an alpha reliability of .87.² The mean for this scale, which has a possible range of 11 to 33, was 29.2 in 1983 with a standard deviation of 4.0. Life satisfaction is measured by the standard single-item indicator: "Taking everything together, how would you say you are these days? Would you say you are very happy (=3), pretty happy (=2), or not too happy? (=1)." In 1983, the mean on this variable was 2.3 and the standard deviation was .56. This item has been used in previous research (e.g., Glenn 1975).

Independent Variables

To distinguish between entering and completing the launching process, we use two measures. EMPTY NEST is coded 1 if the respondent reports no children in the household in 1988 and 0 if there are children in the household in 1988. (All of the respondents had at least one child 14 or

was comparable to national distributions of married individuals under 55 on age, race, household size, tenure, and region. Analysis of panel attrition over the following two waves demonstrates that the sample remains representative of our target population, although men, renters, and those with low education were more likely to drop out of the sample. Probit analysis demonstrates that the probability of dropping out of the sample is unrelated to marital happiness scores on the prior interview. We feel confident that, with appropriate controls for background factors, the panel remains an effective tool for evaluating factors associated with change in marital quality.

² The scale includes seven items asking about happiness with specific aspects of marriage (understanding, love, agreement, sexual relationship, taking care of things around the house, companionship, and faithfulness) and four global satisfaction items (overall happiness of marriage, rating of own marriage compared to others, strength of love for spouse, and whether the marriage is getting better or worse).

¹ In 1980, sample households were chosen using random digit dialing procedures. A second random procedure was used to select the respondent. Only married individuals under 55 were included in the sample. Interviews were completed with 65 percent of those estimated to be eligible; among households where an eligible respondent was contacted, the completion rate was 76 percent. The 1980 sample

older in the household in 1983.) Using this definition, 123 of the 402 respondents (31 percent) launched all of their children by 1988. Nearly three-fourths (194) of those coded 0 on the empty nest variable entered the launching process and have at least one nonresident child in addition to the children still in the household. The dummy variable *PARTIAL LAUNCH* identifies these parents who have started but not completed the launching process. A comparison of the effects of these two variables tells us more precisely what stage of the launching process affects parental well-being.

Background Variables

Gender-role traditionalism is measured by a 7-item Likert-type scale asking about normative behavior for men and women. The scale has an alpha reliability of .71. Mother's employment is a dummy variable (1 = employed more than 35 hours per week). Presence of stepchildren is coded 1 if there are children of the respondent or his/her spouse in the household who are more than one year older than the current marriage. Boys is a dummy variable scored 1 if any of the children in the household in 1983 were boys.

FINDINGS

Because the dependent variables are continuous, OLS regression is used. To assess whether changes in well-being are associated with child-leaving, we regress the 1988 score for the dependent variable on the 1983 score of the dependent variable and the launching variables. The effective dependent variable is change in well-being, i.e., that part of the 1988 score that is not predicted from the 1983 score. Control variables include respondent's sex, age, education, and gender-role traditionalism, the number of children in the household, whether any of the children were boys, presence of stepchildren, age of youngest child, and mother's employment status.

The Effect of Launching, 1983-1988

We first ask whether the launching process is associated with significant changes in life satisfaction or marital happiness between 1983 and 1988. The results are presented in columns 1 and 5 of Table 1.

EMPTY NEST has a significant positive effect on marital happiness, but not on life satisfac-

tion.³ Column 1 shows that having launched all of one's children is associated with a 1.10-point increase on the marital happiness scale. The positive effect of the empty nest on marital happiness but not on life satisfaction coincides with Glenn's (1975) finding that the correlation of empty nest with marital happiness is stronger than with life satisfaction.

PARTIAL LAUNCH has no effect on either life satisfaction or marital happiness. A comparison of the results for the two independent variables suggests that total absence of children rather than simply older children or fewer children is necessary before the launching process improves marital happiness.

Interaction Effects: Parental Stress Indicators

Next we examine whether the effects of the empty nest are general across all parents or whether they depend on extent of parental strain. In the case of life satisfaction, we ask whether more highly stressed parents experience improvement following launch. We hypothesized that stress would be greater under the following conditions: respondent was female, more highly educated, or reported nontraditional gender roles, the number of children was larger, any of the children were boys or stepchildren, mother was employed, or age of youngest child was low. All stress indicators were drawn from the 1983 data. The tests involved adding a multiplicative term (e.g., *EMPTY NEST* × gender-role traditionalism) to the equations in columns 1 and 5. Because *EMPTY NEST* rather than *PARTIAL LAUNCH* appears to be the relevant variable, the interactions were restricted to the *EMPTY NEST* variable.

Only one of the 16 tests of interaction was significant: the lower the age of youngest child, the greater the improvement in marital happiness following the empty nest (columns 2 and 6). For life satisfaction, the term was also negative, but not significant ($p = .09$). The equation predicts an improvement on the marital happi-

³ Because of inconsistencies in data availability across the three waves, the full analysis cannot be replicated for the other panel components. A replication of the analysis in columns 1 and 5 of Table 1 for the 1980-1988 panel, however, produces very similar results. Using 517 individuals with children 10 or older in 1980, the effect of *EMPTY NEST* on change in marital happiness was significant and positive ($b = 1.03, p = .009$) and on life satisfaction was insignificant ($b = .01, p = .84$).

Table 1. OLS Regression Equations Showing the Effect of Child-Leaving on Change in Marital Happiness and Life Satisfaction Between 1983 and 1988 (Unstandardized coefficients; standard errors in parentheses)

Variable	Marital Happiness, 1988				Life Satisfaction, 1988			
	Total		Launchers ^a		Total		Launchers ^a	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PARTIAL LAUNCH	.06 (.45)	-.06 (.45)	— —	— —	-.03 (.07)	-.05 (.07)	— —	— —
EMPTY NEST	1.10* (.53)	3.83* (1.48)	1.21* (.42)	2.83 (1.99)	.04 (.09)	.40 (.24)	.05 (.07)	.06 (.32)
EMPTY NEST × age youngest		-.16* (.08)		-.15 (.09)		-.02 (.01)		-.03* (.01)
EMPTY NEST × CONTACT ^b		— —		1.02 (1.48)		— —		.52* (.24)
<i>Control Variables, 1983</i>								
Marital happiness	.77** (.04)	.77** (.04)	.74** (.05)	.74** (.05)	— —	— —	— —	— —
Life satisfaction	— —	— —	— —	— —	.39** (.05)	.39** (.05)	.41** (.06)	.42** (.05)
Sex	.40 (.35)	.40 (.34)	.19 (.39)	.22 (.39)	-.12* (.06)	-.12* (.06)	-.13* (.06)	-.12 (.06)
Education	-.03 (.07)	-.02 (.07)	-.05 (.07)	-.04 (.07)	.02* (.01)	.03* (.01)	.02 (.01)	.02* (.01)
Age	.01 (.03)	.02 (.03)	.01 (.04)	.02 (.04)	-.01 (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)
Gender role traditionalism	-.09 (.07)	-.10 (.07)	-.07 (.08)	-.08 (.08)	-.00 (.01)	-.00 (.01)	-.00 (.01)	-.00 (.01)
Boys	.12 (.38)	.04 (.39)	-.24 (.42)	-.34 (.42)	.07 (.06)	.06 (.06)	.05 (.07)	.03 (.07)
Age of youngest child	.00 (.05)	.05 (.05)	-.02 (.05)	.03 (.06)	.01 (.01)	.02* (.01)	.02 (.04)	.03** (.01)
Number of children in household	.30 (.21)	.39 (.21)	.27 (.23)	.34 (.23)	.03 (.03)	.04 (.03)	.02 (.04)	.04 (.04)
Mother's employment	.36 (.35)	.34 (.35)	.10 (.38)	.09 (.38)	-.02 (.06)	-.02 (.06)	-.08 (.06)	-.08 (.06)
Presence of stepchildren	-.51 (.54)	-.36 (.55)	.05 (.58)	.24 (.59)	-.04 (.09)	-.02 (.09)	-.04 (.09)	-.02 (.09)
CONTACT with nonresident children, 1988 ^b	— —	— —	-.57 (.56)	-.81 (.62)	— —	— —	.08 (.09)	-.02 (.10)
Intercept	6.01	5.26	8.02	7.34	1.32	1.22	1.39	1.28
R ²	.50	.50	.48	.50	.17	.17	.21	.21
N	402		317		402		317	

* $p < .05$, ** $p < .01$ ^a Includes empty nest parents and partial launch parents. PARTIAL LAUNCH variable is not defined for this group.^b CONTACT is defined only for respondents with nonresident children.

ness scale of 1.59 points for an empty nest respondent whose youngest child in 1983 was 14, compared to a decrease in marital satisfaction for respondents whose youngest resident child in 1983 was 24 or older. (The contingent intercepts are 6.0 and 6.4 respectively.)

Although one of 16 tests would be significant by chance alone, we are inclined to interpret this result substantively. The greater relief from the exit of younger children may stem from the greater demands that teenage children place on parents compared to young adults. Age of youngest child also stands as a rough proxy for recency of the empty nest stage: everything else equal, the younger the youngest child, the more recently the empty nest is likely to have occurred. Viewed in this light, the positive impact of recency effectively repudiates role change theory, which predicts a strong deleterious effect when the change is recent. Instead, these results suggest the possibility of a modest post-launch honeymoon stage.

Overall, this examination of possible interaction effects suggests that the empty nest is associated with significant improvements in marital happiness for nearly all parents, but is not associated with significant changes in life satisfaction. This finding supports the most general form of the stressful role hypothesis. The general absence of interaction effects for the marital happiness finding suggests that even the best of children of the most conventional parents tend to be a source of strain in the marital relationship. The one interaction effect, between EMPTY NEST and age of youngest child on marital happiness, however, suggests that this barrier is stronger when the children are teenagers rather than young adults.

Post-Launch Relationships

One plausible reason for the relatively small effect of emptying the nest found in this and previous studies is that children continue to be very much a part of their parents' lives after they leave home. Among respondents with nonresident children, 88 percent reported that they had seen or talked to one of their nonresident children in the three days prior to the interview and 80 percent had seen or talked to a child the previous day. Out of the house is rarely out of sight, much less out of mind.

The 1988 data set includes two measures of post-launch relationships. One is a Likert-type measure that asks, "Do obligations to (child/

children) not living with you take a lot of your time and energy, quite a bit, a little, or hardly any?" The second is a summary of questions asking, for each child living away from home, "How many days has it been since you have seen or talked to (child)?" CONTACT is a dummy variable indicating whether the respondent has seen or talked to a nonresident child in the last three days. The measures of post-launch contact are available only for the 317 respondents who have some or all of their children living away from home.

Only a few parents (4 percent) reported that their nonresident children required a lot of time and energy. This variable had no main or joint effects on either measure of parental well-being, nor did it reduce the coefficients for EMPTY NEST (results not shown). Regardless of how much or how little trouble nonresident children are, the empty nest is associated with an increase in marital happiness and unrelated to change in life satisfaction.

Contact with children had no main or joint effects on marital happiness (columns 3 and 4), indicating that no matter how often the children dropped by or called, their nonresidence status improved marital happiness. There was, however, a significant joint effect of CONTACT and EMPTY NEST on life satisfaction (column 8). Among parents with nonresident children, the multiplicative term for age of youngest child and EMPTY NEST was also significant for life satisfaction.

The empty nest has a positive effect on life satisfaction ($b = .52$) when there is contact with nonresident children, but a negative effect ($b = -.40$) when there has not been recent contact.⁴ Among parents with nonresident children (before as well as after the addition of the interaction term for CONTACT), there is a significant interaction for age of youngest child similar to that for marital happiness: the lower the age of the youngest child, the greater the improvement in life satisfaction following the empty nest. When the youngest child in 1983 was 14, the

⁴ The coefficient for EMPTY NEST reported in column 8 is the effect of EMPTY NEST when both CONTACT and age of youngest child are zero. In order to evaluate the effect of each interaction term separately, this term was recalculated at the mean for the other variable. For example, when age of youngest child is at its mean value (15.3), then the effect of empty nest without CONTACT is $-.40$. Similarly, when CONTACT is at its mean (.88), then the effect of the empty nest when age of youngest child is zero is $.52$.

empty nest entailed a .10-point increase in life satisfaction; when the youngest child in 1983 was older than 18, the effect of empty nest was actually negative. Again, a plausible explanation is that the positive impact of the empty nest is strongest in the period immediately after the children leave.

Although the positive conditional effect of contact contradicts our initial expectations, the strength of parental attachment and identification with children makes it understandable that the positive effects of emptying the nest depend on not being estranged from one's children. The finding of a positive, conditional effect of contact with children supports the view that parenthood is an important, identity-affirming role. Although actually living with one's teen-age children may pose obstacles to the marital relationship, it appears that life satisfaction depends on continued affirmation of the parental role.

DISCUSSION AND CONCLUSION

This study adds to the literature on the family life cycle by using a relatively large national panel to assess changes in marital happiness and life satisfaction associated with children leaving home.

Emptying the nest is associated with significant improvements in *marital happiness*, regardless of parent's or children's characteristics. The effect however, is significantly stronger when there had been young teens in the household. Having entered the launching stage (having launched some children, but not all) does not affect marital happiness.

Emptying the nest has no main effect on changes in *life satisfaction*. Analysis of parents who have launched some or all of their children shows that the empty nest is associated with improvements in life satisfaction under two conditions: when there is frequent contact with the nonresident children or there were young teens in the household in 1983.

These findings directly contradict predictions from role change theory. Assuming that age of youngest child in the household in 1983 stands as a rough proxy for recency of launch, these findings suggest that the empty nest produces greater improvement in marital happiness and life satisfaction immediately after the children leave.

The generally positive effects of the empty nest on parental well-being support the hypothesis that parenting is a stressful role and that

parents are relieved to see an end to co-residence. The general absence of interaction effects suggests that the mere presence of children — regardless of number, sex, provenance, parent's gender roles, and other indicators of parental stress — creates a modest obstacle for their parents' marriage. These findings echo and extend the work of Glenn and McLanahan (1982): all parents experience a modest increase in marital happiness following the empty nest.

Launching teens produces greater improvements in both marital happiness and life satisfaction than the launching of older children. Because none of the other indicators of parental stress modified the effect of the empty nest, we are inclined to interpret this finding as a reflection of timing rather than stress. It suggests that the positive effect of the empty nest is strongest in the period immediately after the children leave home.

These data also provide support for role identity theory: The empty nest is associated with significantly greater improvement in life satisfaction when the empty nest includes frequent contact between parents and children. Although parents respond positively to the end of co-residence, continuation of the parental role appears to be important to parental well-being. Our data suggest that when the empty nest results in the end of the parental role, indicated by infrequent contact between parent and children, life satisfaction is reduced. For most parents, however, the end of co-residence does *not* end the parental role. Instead, most of these respondents see or talk to a nonresident child daily.

The end of co-residence has a generally positive effect on parental well-being, resulting in a modest post-launch honeymoon. A thoughtful examination of parenthood in our society suggests that any more substantial outcome is unlikely. First, 20-25 years of active parenthood leave a mark on dyadic relationships and individual personalities that cannot be eliminated simply because the children are gone. As Lee (1988) notes, the distinct gender roles associated with parenthood have a permanent effect on parents' lives and relationships. Second, the impact of the empty nest is reduced by the close ties and frequent contact between parents and children that suggests that separate residence is a relatively minor act of disengagement. As long as the normative, economic, and psychological links between parents and children continue, it is unrealistic to expect that a simple

change of residence will raise the burdens from parental shoulders and enable them to gambol off into a carefree sunset.

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SACRIFICE FOR THE CAUSE: GROUP PROCESSES, RECRUITMENT, AND COMMITMENT IN A STUDENT SOCIAL MOVEMENT*

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Recruitment and commitment in protest movements are best explained by analyzing group-level political processes such as consciousness-raising, collective empowerment, polarization, and collective decision-making. Such processes increase protesters' political solidarity—their commitment to the cause and their belief in the non-institutional tactics that further that cause. Other frameworks, such as the rational choice and collective behavior approaches, are less adequate in accounting for recruitment and commitment. Rational choice perspectives neglect group processes by suggesting that decisions about whether to join or stay at a protest are based largely on isolated individual cost/benefit calculations. The collective behavior view that protests are spawned by confused and insecure individuals in situations of social unrest cannot be reconciled with the fact that most protests originate among close-knit groups of politically committed activists using carefully planned strategies and tactics. These conclusions are based on a study of the 1985 Columbia University divestment protest.

Early analyses of protest movement mobilization emphasized the irrationality of movement participation and argued that marginal, insecure people join movements because of a need for social direction. This approach has lost popularity because many movement participants are socially integrated and quite rational. A popular current approach, rational choice theory, counters by suggesting that movement participation is the result of individual cost-benefit calculations. But even the most elaborate individual incentive models cannot fully account for the manner in which group political processes influence movement participants to sacrifice individual interests in favor of a collective cause.

This article develops an alternative perspective on recruitment and commitment to protest movements; it emphasizes the importance of the development of *political solidarity*, that is, support for a group cause and its tactics. Mobilization

can then be explained by analyzing how group-based political processes, such as *consciousness-raising, collective empowerment, polarization, and group decision-making*, induce movement participants to sacrifice their personal welfare for the group cause. Empirical support for this perspective comes from a detailed analysis of a Columbia University student movement that demanded that the university divest itself of stock in companies doing business in South Africa.

CURRENT THEORIES

One view of recruitment and commitment in protest movements has been formulated within the crowd theory and collective behavior traditions. This view emphasizes social factors, proposing that movements arise in situations of disorganized unrest associated with broad social changes (Tarde 1969; LeBon 1960; Hoffer 1951; Kornhauser 1959; Smelser 1962). Mar-

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ginal, insecure, irrational people join these movements because they provide needed social direction unavailable from existing social institutions.

The most sophisticated collective behavior view, the *emergent norm* approach of Turner and Killian (1987), downplays the irrationality of movement participation, but retains as its basic proposition the idea that collective behavior arises in socially disorganized settings. They stress that confused, impulsive people without institutional routines to direct them are the most likely recruits for collective behavior and argue that many individuals participate in collective behavior because they "feel insecure about themselves and their status in society" and receive psychic benefits such as feelings of power and righteousness that are "not directly related to the goals of the collectivity" (1987, p. 32).

The major difficulty with this perspective is that the setting in which political protest movements originate is typically not characterized by confusion, insecurity, and unrest, but by careful planning by close-knit groups of politically committed activists (Morris 1984). New recruits to such movements usually join because they support the political cause and believe that only non-institutional tactics can advance that cause (Pinard 1971; Oberschall 1973; Gamson 1975; Snow, Zurcher, Ecklund-Olson 1980; Snow, Rochford, Worden, Benford 1986).

Resource mobilization views of protest movement participation reject the emphasis on unrest and irrationality and stress the similarities between institutional and non-institutional political behavior. Many resource mobilization theorists use an economic model of movement participation (Olson 1965), arguing that recruitment is accomplished by movement entrepreneurs who use divisible *selective incentives* to prevent free-riding by cost-benefit calculating individuals (McCarthy and Zald 1977).

This view overstates the similarities between institutional and non-institutional politics. Unlike those who play by the rules, protesters often face severe repression by those whose authority they challenge. A long-term commitment to a protest movement also may require disconnection from comfortable daily routines. But increased costs do not always result in decreased participation in the movement; protesters often respond to threats and repression by developing a greater willingness to ignore personal costs in favor of the collective struggle (Fireman and Gamson 1979; Hirsch 1986). Even the most

sophisticated rational choice models (Klandermans and Oegema 1987; Mueller and Opp 1986) cannot account for group solidarity in movement recruitment and commitment because they focus on the individual decision to participate and neglect the group processes which influence those decisions (Ferree and Miller 1985).

IMPACT OF GROUP PROCESSES

The best way to explain recruitment and commitment in protest movements is to reject both rational choice and social disorganization views and focus instead on explaining how groups create commitment to their goals and tactics. The following discussion builds on the work of movement theorists (Gamson 1975; Schwartz 1976; Tilly 1978; Gamson, Fireman, Rytina 1982; McAdam 1982, 1986, 1988; Ferree and Miller 1985; Hirsch 1986, 1989; Rosenthal and Schwartz 1989)¹ and conflict theorists (Simmel 1955; Coser 1956, 1967; Edelman 1971; Kriesberg 1973; Sherif, Harvey, White, Hood, Sherif 1988) to provide an explanation of recruitment and commitment to protest movements that emphasizes how four group processes — *consciousness-raising*, *collective empowerment*, *polarization*, and *group decision-making* — create a willingness to sacrifice personal welfare for a collective cause.

Consciousness-Raising

Potential recruits are not likely to join a protest movement unless they develop an ideological commitment to the group cause and believe that only non-institutional means can further that cause. Consciousness-raising involves a group

¹ I have elsewhere (1989) labelled this theoretical tradition "solidarity theory." Perrow (1979) calls those who emphasize the development of movement solidarity "resource mobilization I" theorists, but this term is better reserved for theories that emphasize the similarities between institutional and noninstitutional politics and are sympathetic to rational choice perspectives. Others working in this tradition have described it as "political process theory" (McAdam 1982), but until recently (McAdam 1986; 1988) this theory has generally emphasized macro movement processes and ignored micromobilization. The best approach to further theoretical development in the field of social movements is to elaborate the connections between a macro political process theory and a theory of micromobilization like the one described here.

discussion where such beliefs are created or reinforced. It may occur among members of an emerging movement who realize they face a problem of common concern that cannot be solved through routine political processes. Or it may happen in an ongoing movement, when movement activists try to convince potential recruits that their cause is just, that institutional means of influence have been unsuccessful, and that morally committed individuals must fight for the cause. Effective consciousness-raising is a difficult task because protest tactics usually challenge acknowledged authority relationships. Predisposing factors, such as prior political socialization, may make certain individuals susceptible to some appeals and unsympathetic to others.

Consciousness-raising is not likely to take place among socially marginal individuals because such isolation implies difficulty in communicating ideas to others. And it is not likely to happen among a group of rational calculators because the evaluation of society and of the chances for change is often influenced more by commitment to political or moral values than by self-interest calculations (Fireman and Gamson 1979; Ferree and Miller 1985). Consciousness-raising is facilitated in non-hierarchical, loosely structured, face-to-face settings that are isolated from persons in power; in such *havens* (Hirsch 1989), people can easily express concerns, become aware of common problems, and begin to question the legitimacy of institutions that deny them the means for resolving those problems (Gerlach and Hine 1970; Rosenthal and Schwartz 1989).

Collective Empowerment

The recruitment and commitment of participants in a protest movement may also be affected by a group process called collective empowerment. While recruits may gain a sense of the potential power of a movement in consciousness-raising sessions, the real test for the movement comes at the actual protest site where all involved see how many are willing to take the risks associated with challenging authority. If large numbers are willing to sacrifice themselves for the movement, the chances for success seem greater; a "bandwagon effect" (Hirsch 1986) convinces people to participate in this particular protest because of its presumed ability to accomplish the movement goal. Tactics are more easily viewed as powerful if they are

highly visible, dramatic, and disrupt normal institutional routines.

Polarization

A third important group process is polarization. Protest challenges authority in a way that institutional tactics do not because it automatically questions the rules of the decision-making game. The use of non-routine methods of influence also means that there is always uncertainty about the target's response. For these reasons, one common result of a protest is unpredictable escalating conflict. Each side sees the battle in black and white terms, uses increasingly coercive tactics, and develops high levels of distrust and anger toward the opponent (Kriesberg 1973: 170-3).

Polarization is often seen as a problem since it convinces each side that their position is right and the opponent's is wrong; this makes compromise and negotiation less likely (Coleman 1957). Since it leads each side to develop the independent goal of harming the opponent, movement participants may lose sight of their original goal. Finally, escalation of coercive tactics by those in power can result in demobilization of the movement as individual participants assess the potential negative consequences of continued participation.

But if other group processes, such as consciousness-raising and collective empowerment, have created sufficient group identification, the protesters will respond to threats as a powerful, angry group rather than as isolated, frightened individuals. Under these circumstances, polarization can have a strong positive impact on participation (Coser 1956, 1967; Edelman 1971). The sense of crisis that develops in such conflicts strengthens participants' belief that their fate is tied to that of the group. They develop a willingness to continue to participate despite the personal risks because they believe the costs of protest should be collectively shared. Greater consensus on group goals develops because the importance of social factors in perception increases in an ambiguous conflict (Sherif et al. 1988); protesters become more likely to accept the arguments of their loved fellow activists and less likely to accept those of their hated enemy. Because of the need to act quickly in a crisis, participants also become willing to submerge their differences with respect to the group's tactical choices (Coleman 1957).

Collective Decision-Making

Finally, collective decision-making often plays an important role in motivating the continuing commitment of movement participants. Movements often have group discussions about whether to initiate, continue, or end a given protest. Committed protesters may feel bound by group decisions made during such discussions, even when those decisions are contrary to their personal preferences (Rosenthal and Schwartz 1989). Participation in a protest movement is often the result of a complex group decision-making process, and not the consequence of many isolated, rational individual decisions.

THE COLUMBIA DIVESTMENT CAMPAIGN: A CASE STUDY

The importance of these four group processes — consciousness-raising, collective empowerment, polarization, and group decision-making — in recruitment and commitment in a protest movement is illustrated by the Columbia University divestment protest. In April of 1985, several hundred Columbia University and Barnard College students sat down in front of the chained doors of the main Columbia College classroom and administrative building, Hamilton Hall, and stated that they would not leave until the university divested itself of stock in companies doing business in South Africa. Many students remained on this "blockade" for three weeks. This was a particularly good case for the analysis of movement recruitment and commitment because the majority of the participants in the protest had not been active previously in the divestment or other campus protest movements.

Protest actions of this kind can create problems for researchers because the organizers' need for secrecy often prevents the researcher from knowing of the event in advance. The best solution is to use as many diverse research methods as possible to study the movement after it has begun. I spent many hours at the protest site each day observing the activities of the protesters and their opponent, the Columbia administration. I also discussed the demonstration with participants and non-participants at the protest site, in classrooms, and other campus settings; and examined the many leaflets, position papers, and press reports on the demonstration.

During the summer of 1985, I completed 19

extended interviews, averaging one and one-half hours each, with blockaders and members of the steering committee of the Coalition for a Free South Africa (CFSA), the group that organized and led the protest. The interviews covered the protestor's political background, previous experience in politics and protest movements, her/his experiences during the three weeks of the protest, and feelings about the personal consequences of participation. All quotes are taken from transcripts of these interviews.

I also analyzed responses to a survey distributed to the dormitory mailboxes of a random sample of 300 Barnard and Columbia resident undergraduates during the third week of the protest. The 28-question survey assessed attitudes toward those on both sides of the conflict, the extent of the respondent's participation in the protest and in campus politics and social organizations, the respondent's general political values, and demographic information.

Of the 300 surveys, 181, or 60.3 percent, were returned. Given the situation on campus at the time and the fact that the semester was drawing to a close, it was difficult to increase the return rate through followup letters and questionnaires. If those who returned the questionnaires differed in a significant way from those who did not, survey results would be biased. However, it wasn't only divestment activists who returned the survey; a wide variety of opinions was expressed by respondents. Nine-tenths of respondents had not been active in the divestment movement prior to the blockade, and only about half favored divestment or felt that the blockade was justified when they first heard about it. A copy of the questionnaire and a summary of the results are available from the author upon request.

Consciousness-Raising

The Coalition for a Free South Africa (CFSA) was founded in 1981 to promote Columbia University's divestment of stock in companies doing business in South Africa. It was a loosely structured group with a predominantly black steering committee of about a dozen individuals who made decisions by consensus, and a less active circle of about fifty students who attended meetings and the group's protests and educational events. The group was non-hierarchical, non-bureaucratic, and had few resources other than its members' labor. The CFSA tried

to convince Columbia and Barnard students that blacks faced injustice under apartheid, that U.S. corporations with investments in South Africa profited from the low wages paid to blacks, that Columbia was an accomplice in apartheid because it invested in the stock of these companies, and that divestment would advance the anti-apartheid movement by putting economic and political pressure on the white regime of South Africa.

This consciousness-raising was done in a variety of small group settings, including dormitory rap sessions, forums, and teach-ins. Coverage of the CFSA's activities in the Columbia student newspaper and television reports on the violent repression of the anti-apartheid movement in South Africa increased student consciousness of apartheid and encouraged many students to support divestment.

Even in this early period, conflict between the CFSA and the Columbia administration affected the views of potential movement recruits. At first, the CFSA tried to achieve divestment by using traditional avenues of influence. In 1983, the organization was able to gain a unanimous vote for divestment by administration, faculty, and student representatives in the University Senate, but Columbia's Board of Trustees rejected the resolution. As one protester pointed out, that action was interpreted by many students as an indication that traditional means of influence could not achieve divestment:

I remember in '83 when the Senate voted to divest. I was convinced that students had voiced their opinion and had been able to convince the minority of administrators that what they wanted was a moral thing. It hadn't been a bunch of radical youths taking buildings and burning things down, to destroy. But rather, going through the system, and it seemed to me that for the first time in a really long time the system was going to work. And then I found out that it hadn't worked, and that just reaffirmed my feelings about how the system at Columbia really did work.

The result of CFSA's extensive organizing work was that many students were aware of the oppressed state of blacks in South Africa, the call for divestment by anti-apartheid activists, and the intransigence of the university President and Trustees in the face of a unanimous vote for divestment by the representative democratic body at the university.

Collective Empowerment: The Initiation of the Blockade

In the next phase of the movement, the CFSA sponsored rallies and vigils to call attention to the intransigence of the Trustees. Few students attended these demonstrations, probably because few supporters believed they would result in divestment. Deciding that more militant tactics were necessary, the CFSA steering committee began to plan a fast by steering committee members and a takeover of a campus building. The plan called for chaining shut the doors of the building and blocking the entrance with protesters; this, it was assumed, would lead to a symbolic arrest of a few dozen steering committee members and other hard-core supporters of divestment. The intent was to draw media coverage to dramatize the continuing fight for divestment.

Because they had worked hard on publicity, the steering committee of CFSA expected a large turnout for their initial rally, but fewer than 200 students gathered at the Sundial in the center of campus on the morning of April 4. Speeches were made by a local political official, a representative of the African National Congress, several black South African students, and members of the CFSA steering committee. Many of those interviewed had been at the rally, but none felt that the speeches were any more or less inspiring than speeches they had heard at previous CFSA events.

At the conclusion of the speeches, nearly all of those present agreed to follow one of the CFSA steering committee members on a march around campus. Most expected to chant a few anti-apartheid and pro-divestment slogans and return to the Sundial for a short wrap-up speech. Instead, they were led to the steps in front of the already-chained doors at Hamilton Hall. The protesters did not understand at first why they had been led to this spot, and few noticed the chained doors.

The steering committee member then revealed the day's plan, stating that this group of protesters would not leave the steps until the university divested itself of stock in companies doing business in South Africa. At least 150 students remained where they were; no one recalls a significant number of defections. Within two hours, the group on the steps grew to over 250.

Why did so many students agree to participate in this militant protest? The CFSA steering committee did not have an answer. Student

participation in their relatively safe rallies and vigils had been minimal, so they certainly did not expect hundreds to join a much riskier act of civil disobedience. According to one steering committee member:

Needless to say, I was quite startled by the events of April 4. By noon, there must have been hundreds more people than I expected there would be. I was hoping for 50 people, including the hard core. We would all get carted off, and whatever obstacles were blockading the door would be cut, removed, or thrown up. That's what everyone was expecting. We would have a story written and the press would report that we had done this. Jesus Christ, what happened that day was absolutely mind boggling! I still haven't gotten over it.

It was hard for anyone to predict the high level of mobilization based on the prior actions and attitudes of the participants because so few had been active in the divestment movement prior to April 4. Only 9 percent of the random sample of students reported that they had been at least somewhat active in the divestment movement, yet 37 percent participated in blockade rallies and/or slept overnight on the steps of Hamilton Hall. In fact, these students did not know that they would join this militant protest until it was actually initiated.

It is unlikely that the decision to participate was due to a narrow individual cost/benefit analysis including such costs as the time involved and the definite possibilities of arrest and/or disciplinary action by the university. Regarding personal benefits, it is hard to see how any Columbia student could gain from the divestment of South Africa-related stock.

Rather, participation was due to a belief in the cause and the conviction that this protest might work where previous CFSA actions had failed. Consciousness-raising had convinced these students of the importance of divestment, but they had not participated in the movement because they did not believe its tactics would work. Once several hundred were in front of the doors, many demonstrators felt that such a large group using a dramatic tactic would have the power to call attention to the evils of apartheid and cause the university to seriously consider divestment:

Often when I would see a rally, I'd think that here was a bunch of people huffing and puffing about an issue who are going to be ignored and things are going to go on just as they were before this rally. The fact that there were a couple of hundred people out there with the purpose of altering the way the

University does business gave me the feeling that this would be noticed, that people would pay attention.

The belief in the potential power of the tactic was reinforced by the willingness of several leaders of the movement to sacrifice their individual interests to achieve divestment. Two black South African students who spoke at the rally faced the possibility of exile or arrest and imprisonment upon their return home. About half a dozen CFSA steering committee members had fasted for nearly two weeks simply to get a meeting with the university President and Trustees; two of these students were eventually hospitalized. As one blockader testified:

The fasters were doing something that personally took a lot of willpower for them, and that gave you a little extra willpower. To have to go into the hospital because you were off food for fifteen days, and the Trustees won't even speak to you. It really made me angry at the Trustees, so I was determined that this was not something that was just going to wimper off. At least I was going to be there, and I know others felt the same way.

The leaders of the protest recruited participants by taking personal risks that demonstrated their own commitment to the cause and to this particular tactic; other students in the blockade ignored individual interests in favor of the cause as well.

I do think it has something to do with the support of peers, just seeing that there were people who were willing to extend themselves and put their own asses on the line. I guess it's the self-sacrifice aspect of it that appealed to me, that really drew my attention. These people were willing to sacrifice their own personal interests in a big way, or a larger way than usual. That's something that hit a chord with me. It was the degree to which people were willing to give up self-interest.

Another factor influencing participation may have been the fact that the protesters were not forced to decide to join the protest at all. Instead, they were led as a group to a position in front of the doors, unaware that this was an act of civil disobedience; the only decision to be made was whether or not to leave the protest. Although this was done because CFSA did not want to reveal its plans to campus security prematurely, the unintended consequence was to maximize participation; it was difficult for demonstrators to leave the steps because of the public example of self-sacrificing black South Africans and the fasters.

Of course, each protester had many less public opportunities to leave the protest during the three weeks after April 4th. Most stayed, partly because of growing evidence of the power of this tactic. The protest soon gained the public support of a variety of groups locally and nationally, including Harlem community groups and churches, the Columbia faculty, unions on and off the campus, the African National Congress, and the United Nations. Students on other campuses engaged in similar protests. This support made the blockaders believe that their challenge to the authority of the Columbia administration was moral, necessary, and powerful. One blockader described this as being "part of something that was much larger than myself." Another suggested:

One thing I believe now is that people in a grass-roots movement can actually have an impact, that we're not all completely helpless. I guess it was that sense of power that I didn't have before.

Polarization and Increased Commitment

Because the blockade was an unconventional attempt to gain political influence, the steering committee of CFSA was unable to predict how many would participate. For the same reason, they were unable to predict their opponent's reaction to their tactic. Based on the information they had on recent South African consulate and embassy protests, they assumed they would be arrested soon after the doors of Hamilton Hall were chained. As these expectations of a mostly symbolic arrest were communicated to the less politically experienced blockaders, a consensus developed that the blockade would be short-lived.

However, the administration did not order the arrest of the protesters. Instead, Columbia's President sent a letter to everyone at the university arguing that the students were "disruptive" and "coercive," and that they were trying to impose their will on the rest of the university. He suggested that "countless avenues of free speech" in the university community were open to them and that what they were doing was illegal, that divestment would probably hurt rather than help blacks in South Africa, and that the university was doing all it could to fight apartheid.

University officials began to videotape the protesters in order to prosecute them under university regulations on obstructing university buildings and disrupting university functions. They sent letters threatening suspension or

expulsion to the members of the CFSA steering committee and a few others. Guarantees were given that those who reported for individual disciplinary hearings would be treated more leniently than those who did not. They also obtained a court order calling on participants in the blockade to cease and desist.

By threatening suspensions and expulsions, the administration had raised the stakes; the protesters felt much more threatened by these academic penalties than by symbolic arrests. There were other costs associated with participating in this protest, including dealing with the cold and freezing rain; missing classes, exams, and study time; and losing close relationships with non-blockaders. Ignoring these costs, the steering committee members who received letters refused to go to the disciplinary hearings, suggested that the administration was engaging in unfair selective prosecution, and reiterated their determination to remain in front of Hamilton Hall until the university divested.

Such actions were to be expected from the strongly committed CFSA steering committee. The surprise was that the less experienced majority of protesters also refused to be intimidated and remained on the blockade. They did so in part because of an example of self-sacrifice by one of their own. One of the politically inexperienced students, a senior with three weeks to go before graduation, received a letter threatening him with expulsion. Initially, he was scared:

I was petrified, especially since Columbia has not been fun for me but rather painful. I really wanted to get out of here, and I was horrified by the thought that I would either have to come back to Columbia or go somewhere else and lose credits by transferring. My reaction was, "Why do they have to pick me? Why do I have to be the focal point of this whole thing?"

But he decided not to report for disciplinary action. He felt that he could not give in to his fears in the face of the sacrifices being made by the fasters and South African students.

Listening to the commitment on the part of the steering committee people who had received letters made me feel bad that I even considered leaving the blockade. One other factor was the fasters, the fact that there were South Africans involved in it, and that these people had more on the line than I did. I felt like I could not let these people down. I also felt that I was a sort of representative of a lot of people on the blockade and I felt I could not set a precedent by leaving and backing down.

His example was extremely important for the maintenance of commitment by the other inexperienced blockaders:

They threatened (the blockader) with expulsion. It was sobering in a way. But it helped bond us together. It was stupid to do that because it just made people more furious, and it made people more resolved to stay. We just said we're not going to let him be expelled. We're all going to stick together in this.

The protesters responded as a group to administration threats, not as isolated individuals. Individual concerns about disciplinary actions were now secondary; each blockader saw her or his welfare as tied to the group fate. Paradoxically, the potential for high personal costs became a reason for participation; protesters wanted to be part of an important and powerful movement and they did not want fellow activists to face the wrath of the authorities alone. The night the threat of arrest was assumed to be greatest, Easter Sunday, was also the one night out of twenty-one with the greatest number sleeping out on the blockade. Soon after this, 500 students signed a statement accepting personal responsibility for the blockade.

Collective Decision-Making and the End of the Blockade

Another group process which influenced participation in this protest was collective decision-making. Open-ended rap sessions among the blockaders, lasting up to four or five hours, were begun after administration representatives delivered the first disciplinary letters to the protesters. In all cases, a serious attempt was made to reach consensus among all those on the steps; votes were held on only a few occasions. One of the main questions was whether to continue the protest. This discussion was initiated by members of the CFSA steering committee because of their commitment to democratic decision-making, and because they understood that the blockaders would be more likely to continue the protest if they participated in a collective decision to do so. During the first two weeks of the protest, the consensus was to continue the blockade.

By the third week, though, some of the protesters began to feel that the protest should be ended. The sense of crisis had been dulled by the lack of action by the administration to back up their threats. It was now clear that there were no plans to call in the police to make arrests. As one

blockader put it, the "university's policy of waiting it out was becoming effective." Also, an event can be news for only so long, and the image of Columbia students sitting on some steps became commonplace. Diminishing television and print coverage reduced the collective belief in the power of this particular tactic. As one protester suggested:

It was during the third week that I started spending nights at home and coming up in the morning. During the last week I probably spent three nights out [on the steps] and four nights at home. During that third week a kind of mood of lethargy hit, and it became a chorelike atmosphere. There was a lot of feeling that it was kind of futile to stay out there.

In the face of declining participation, long and heated discussions were held about ending the protest. Proponents of continuing the action argued that protesters ought to honor their commitment to stay in front of the doors until Columbia divested. Those who advocated ending the protest argued that divestment was not imminent and that the blockade was no longer effective. As one protester put it:

The blockade ended because a very thoughtful and carefully planned decision was made. It was a question of what we could do that would be most effective for divestment. We decided that the blockade had done a lot, but at this point other things would be better, seeing how the administration was willing to sit us out.

On the 25th of April, the blockade officially ended with a march into Harlem to a rally at a Baptist Church. Five months later, the Columbia Trustees divested.

SURVEY RESULTS

Participant observation of the protest as well as extended interviews with the protesters revealed that certain group processes — consciousness-raising, collective empowerment, polarization, and group decision-making — influenced recruitment to and motivated continuing participation in the blockade. Findings from the survey support this conclusion.²

² A single cross-sectional survey cannot assess the importance of group processes. If one finds a political attitude to be highly correlated with participation in the blockade, how does one know whether the attitude caused participation or participation caused the attitude? This demonstrates the need for the qualitative methods of participant observation and extended interviews. Analysts should do baseline sur-

Table 1. Regression Between Level of Participation in the Blockade and Selected Independent Variables: Columbia University, 1985

Independent Variables	b	Beta
Conservative-liberal scale	.25	.32*
Support for divestment X effectiveness of blockade	.09	.24**
Personal expense caused by blockade justified?	.10	.15*
Opinion of university President declined	.18	.13*
Divestment will influence South African government?	.17	.14*
Extent of prior participation in divestment movement	.32	.09
Membership in campus political action organization	.09	.04
Number of campus organization memberships	-.01	-.01
First-year student	.05	.02
No religious affiliation	-.08	-.03
Constant	-.17	---

* $p < .05$ ** $p < .01$

Note: $R^2 = .59$; $N = 176$.

One question on the survey asked the respondent to report on his or her level of involvement in the protest. Responses indicated that 18 percent completely avoided the demonstration, 44 percent stopped by out of curiosity, 20 percent participated in the rallies supporting the blockade or frequently joined the demonstration during the daytime, and 17 percent spent at least one night sleeping on the steps.

Table 1 shows a multiple regression analysis with responses to the participation question as the dependent variable and a variety of possible correlates of participation as independent variables. The resulting equation explains 59 percent of the variance in participation. The single most important predictor is being politically liberal or radical, indicating that general ideological predisposition, not just commitment to the specific cause, has an important impact on protest participation. This is consistent with the findings of Walsh and Warland (1983) and

veys to assess attitudes before a movement begins, as some analysts have done (Klandermans 1984; Klandermans and Oegema 1987; McAdam 1986; 1988). But as Walsh and Warland (1983) have pointed out, it is often difficult to predict the need for such baseline surveys before the outbreak of protest.

Mueller and Opp (1986).

Another important factor associated with participation is the interaction effect between support for Columbia's divestment of all stock in companies doing business in South Africa, and a belief that Columbia would divest as a result of the blockade.³ This result indicates the importance of both consciousness-raising and collective empowerment processes in recruitment and commitment to protest; it shows that those who support the specific cause and believe in the power of the tactic to further that cause are likely to participate in a protest.

That participation is associated with a belief in the power of the collective tactic to further movement goals is given further support by the fact that those who felt that divestment would influence the policies of the South African government were more likely to join the movement. Finally, the equation shows an independent association of a declining opinion of the university President with participation, supporting the notion that a polarization process had an important effect on participation in the blockade.

A variety of other factors were entered in the equation to assess the propositions of rational choice and collective behavior theories. Those who felt that any personal expense or inconvenience suffered as a result of the blockade was justified were more likely to participate in the protest. In other words, participants were committed to the group cause and felt that personal costs suffered as a result of participation were justified. Other factors emphasized by resource mobilization theories of participation, such as prior participation in the divestment movement or in a political action group on campus, were not highly associated with joining the blockade. Propositions about the association between social marginality or a lack of values and recruitment to movements are not supported; being a first-

³ Klandermans' work (1984) inspired the use of an interaction term. Running the equation with the "support for divestment" question substituted for the interaction term results in an equation that explains 57 percent of the variance in participation. A similar result is obtained if only the question about whether Columbia would divest as a result of the blockade is included. If both questions are included and the interaction term omitted, the percentage of variance explained is 58 percent. In other words, the percent of variance explained is higher in the equation with only the interaction effect than with the main effects entered separately or together.

year student, lacking a religious affiliation, and being a member of a small number of campus groups were not highly correlated with participation in the blockade.

CONCLUSION

Rational choice theories cannot explain why students joined and became committed to this protest action because group processes are not just the sum of individual preferences or predispositions. Such frameworks cannot easily account for why participants felt willing to accept the personal costs associated with this protest; it is contradictory to argue that students stayed on the blockade to enjoy the selective incentive of self-sacrifice. Recruitment and commitment to the blockade can only be understood through the analysis of how group discussions, empowerment, conflict, and decision-making led participants to a willingness to sacrifice self-interest in pursuit of a valued collective goal using a non-institutional tactic.

Collective behavior theory is right about the importance of group-level processes in the mobilization of noninstitutional movements. But its proposition that protest originates in disorganized unrest certainly does not apply here. Years of well-organized activities by the CFSA were crucial in raising consciousness about the apartheid issue and on the need for noninstitutional means of influence to achieve divestment. The blockade itself was initiated only after two months of careful planning by the CFSA steering committee.

The blockaders were not just isolated individuals with preferences for divestment nor a set of confused, insecure people; rather, they were people who had been convinced by CFSA meetings that apartheid was evil, that divestment would help South African blacks, and that divestment could be achieved through protest. They joined the blockade on April 4th because it appeared to offer a powerful alternative to previously impotent demonstrations and because of the example of self-sacrificing CFSA leaders. The solidarity of the group increased after the administration's escalation of the conflict because group identification among the protesters was already strong enough so that they responded to the threat as a powerful group rather than as powerless individuals. Protesters remained at this long and risky protest partly because of the democratic decision-making processes used by the group.

This analysis of the 1985 Columbia University divestment protest indicates that useful theories of movement mobilization must include insights about how individual protesters are convinced by group-level processes to sacrifice themselves for the cause. This means asking new kinds of questions in movement research: What kinds of arguments in what kinds of settings convince people to support a political cause? Why do potential recruits decide that non-institutional means of influence are justified and necessary? Under what circumstances is the example of leaders sacrificing for the cause likely to induce people to join a risky protest? Why do some tactics appear to offer a greater chance of success than others? Under what conditions do threats or actual repression by authorities create greater internal solidarity in a protest group? Under what conditions do threats or repression result in the demobilization of protest? What kinds of group decision-making processes are likely to convince people to continue to participate in a protest movement?

Generalizing from case studies is always difficult. Some aspects of student movements make them unusual, especially the ability of organizers to take advantage of the physical concentration of students on campuses. But the important impact of group processes on movement recruitment and commitment is not unique to the 1985 Columbia anti-apartheid movement. The development of solidarity based on a sense of collective power and polarization was also found in a Chicago community organization (Hirsch 1986). And these same group processes were crucial in the mobilization and development of the Southern civil rights movement of the 1950s and 1960s. Consciousness-raising occurred in black churches and colleges. The collective power of protest was evident to those who participated in bus boycotts, sit-ins, freedom rides, and in Freedom Summer. The movement relied heavily on the creation of polarized conflict between the white Southern segregationist elite and black protesters to recruit participants, to gain national media attention, and ultimately to force federal intervention to redress the social and political grievances of Southern blacks (McAdam 1982; Morris 1984). Finally, two of the major mobilizations in the 1960s student movement — the Berkeley Free Speech movement in 1964 and the Columbia conflict in 1968 — developed in a manner similar to the 1985 divestment movement (Heirich 1970; Avorn 1968).

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FORMAL ORGANIZATION AND THE FATE OF SOCIAL MOVEMENTS: CRAFT ASSOCIATION AND CLASS ALLIANCE IN THE KNIGHTS OF LABOR*

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This paper asks how an existing field of formal organizations influences the formation of social movements around new interests. Data on the Knights of Labor are used to examine how craft organization in the iron and steel industry affected the incorporation of industrial workers into the labor movement. We find that even in the absence of ideological opposition to class-based organization, building on craft associations tended to create a divided and limited labor movement. This study suggests that pre-existing organization can simultaneously help emerging interest groups organize and reinforce the traditional divisions that segment these emerging interest groups.

How does an existing organizational field shape the expression of new, non-elite interests? In this paper, we investigate a case where the formation of a new interest was exceptionally clear-cut: the emergence of the industrial workers' movement. Specifically, we examine how existing craft organization in the Knights of Labor affected the mobilization of less-skilled workers. Our focus is on the iron and steel industry, one of the most important arenas for labor movement development during 1875-1895. The events of this period were critical in shaping the course of the American labor movement.

The social movements literature, particularly work influenced by resource mobilization theories, treats existing organization as a key determinant of whether or not non-elite demands are heard (Tilly 1978, pp. 62-3; Freeman 1983; Morris 1984, p. 280; Jenkins 1983; McAdam 1982, Chapters 2 and 3). This literature suggests that the powerless can only hope to attain the

necessary resources and solidarity to pursue their interests by drawing upon pre-existing social organization.

Most studies that link pre-existing organization and collective action treat interests as fixed. The analytical challenge is to explain how changes in resources, organization, and political opportunities affect collective campaigns to redress long-held grievances. Little attention is paid to the effects of pre-existing organization when new interests emerge. A consideration of new interests, however, suggests that prior organization can play an ambiguous role in the mobilization of powerless groups. Since the population that shares an emerging interest often had few, if any, common interests in the past, pre-existing organization is likely to reinforce old identities, and thus, to segment the new interest group rather than to promote solidarity. In other words, prior organization can impede collective action by redirecting its goals or limiting its forms. In particular, craft organization played an ambivalent role in labor movement development, sometimes enhancing broader mobilization and sometimes restricting movement goals.

In this study, we investigate how the field of existing collective organizations can alter the form and fate of new organizational attempts. We examine how existing organization of craft occupations in the Knights of Labor (1) affected the rate at which less-skilled workers were recruited into the labor movement and (2) shaped the organizational strategies adopted by less-skilled workers.

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CRAFT ORGANIZATION AND INDUSTRIAL WORKERS' INTERESTS

Change that is massive enough to produce new interests is likely to disorganize the affected population. The second half of the nineteenth century was a period of such change for the working class in both the United States and western Europe. Mechanization and work reorganization reduced the need for many traditional craft skills and created a need for semi-skilled labor, an occupational category that had been virtually unknown. Long before the century ended, contemporary commentators recognized that a new class of proletarianized workers was emerging, and argued that ameliorating the problems created by industrialization required organizing workers around a common identity as wage labor (Hobsbawm 1989, pp. 124-9; Yellowitz 1977). But the rigors of industrial discipline, and the high rates of geographical mobility, depleted wage earners' organizational resources. Modern forms of discipline and the sharp distinctions separating different grades of work isolated workers at work, and long hours made it difficult to socialize after work. Although industrialization undercut all workers' positions, craft workers—unlike less-skilled workers—frequently retained enough resources to defend their own interests in the short run. Nevertheless, changing circumstances rapidly demonstrated that unless they reshaped the labor movement, even craft workers were likely to find themselves in trouble in the long run. Thus, craft organization became the obvious, and sometimes the only, potential sponsor for broad working class mobilization.

The iron and steel industry provides a good example of how industrial changes created both common interests between skilled and less-skilled workers, and obstacles to joint action. Before the Civil War wrought iron was the industry's most important product, and the process by which it was manufactured sharply divided craft workers from unskilled laborers but made it relatively easy for craft workers to organize. Craft know-how was indispensable in producing wrought iron. Each step, from refining (where puddlers skillfully agitated batches of molten pig iron and cinder until the purified metal crystallized into balls) to finishing (where rollers, heaters, roughers, and shearers caught, reheated, shaped, and cut the metal to size) required skill and experience (Brody 1960, pp. 8-17; Elbaum and Wilkinson 1979, pp. 276-7,

283-4). Initially, each craft organized independently. In 1862, the largest craft, the puddlers, formed the United Sons of Vulcans. The United Sons of Vulcans then joined with other craft workers to form the Amalgamated Association of Iron and Steel Workers (hereafter, the Amalgamated), which quickly became the strongest union of the day (Holt 1985, p. 171; Brody 1960, p. 50).

Shortly after the Civil War, technological changes transformed the skill requirements of the iron and steel industry, undercutting craft workers' power. In the late 1860's, for example, the Bessemer converter made it possible to produce steel—the superior metal for rails—much more cheaply. In response to the increased economies of scale, greater heating requirements and greater demands for chemical knowledge associated with Bessemer conversion, manufacturers built integrated plants, introduced direct management of furnaces, and hired professional chemists to oversee production (Temin 1964, pp. 153-5). These developments made skilled puddlers unnecessary, and reduced the skill content of many other craft jobs. Moreover, they heightened the incentive to mechanize and reorganize other stages of the process, further undermining craft workers' position. While manufacturers continued to rely on craft hierarchies and networks to ensure cooperation among work crews and to recruit and train the craftsmen in remaining trades (Stone 1974; Montgomery 1987, p. 29; Form 1987, p. 35), skilled jobs provided a decreasing proportion of employment, and skilled workers were increasingly dependent upon specific factories. With dependence came job insecurity and growing exposure to the problems that less-skilled workers faced—long hours, intensified production schedules, and arbitrary authority.

As early as 1877, some union leaders warned members that continued exclusion of less-skilled workers endangered union power, especially in the mammoth steel mills that employed a growing proportion of the industry's work force (Holt 1985, pp. 172-3; Montgomery 1987, p. 24). But many members clung to the established loyalties and familiar patterns of action that had been successful in the past. Through the Amalgamated, skilled workers had established work rules that enabled them to control production, and had won wages that were twice as high as those paid to laborers. Since these gains had been achieved through intense industrial conflict and maintained through craft exclusive-

ness, workers were reluctant to abandon craft organization (Elbaum and Wilkinson 1979, pp. 285-95).

For their part, less-skilled workers had few resources, material or organizational, for initiating and sustaining collective action. Many were rural migrants from the Northeast (Montgomery 1987, p. 24). Coming from recently settled, sparsely populated areas, these workers lacked the well-developed repertoire of collective action characteristic of many European peasant communities. Others came direct from Europe, and these built nationality-based institutions such as churches, lodges, and savings societies that frequently reinforced ethnic divisions. Employers took advantage of such divisions by recruiting strikebreakers whose nationality or language made it difficult for the strikers to communicate with them (Olzak 1989; Montgomery 1987, p. 26).

Since the less-skilled had so few resources, craft associations offered the most obvious organizational base for building a broad working-class movement. To use Oberschall's (1973, p. 125) term, craft organization provided a basis for bloc mobilization that could catalyze a viable industrial labor movement in the iron and steel industry.

ORGANIZATIONAL DYNAMICS AND THE LABOR MOVEMENT

In the late nineteenth century, no industry in the United States developed a successful broad-based labor movement. If we view American workers in isolation and focus only on surviving organizations like the Amalgamated, current resource mobilization theories seem sufficient to explain this absence of a working class movement: the changes that gave iron and steel workers substantial common interests simultaneously weakened most of the formal and informal bonds upon which a broad labor movement could have been built. Thus, workers were left with too few organizational resources to build a working class movement.

The limitations of this interpretation become clear when we expand our field of interest. French, English, German, and American workers experienced similar changes in the late nineteenth century, but while European labor movements incorporated less-skilled workers comparatively early, the American labor movement did not (Katznelson and Zolberg 1986, pp. 36-7, 40-1; Marks 1989, p. 233; Friedman 1988). In

the U.S., the Amalgamated and other national craft unions formed the American Federation of Labor (A.F.L.) — an exclusive craft federation that suppressed industrial and class organizations (e.g., Mink 1986). French craft workers, in contrast, supported mobilization around common industrial interests and helped launch a broad-based labor movement (Hanagan 1980). Since American craft workers were probably better organized than their French counterparts, the level of organization alone cannot explain these differences. Instead, we must examine the contingencies shaping the strategies employed by craft associations and the role these strategies played in the developing labor movement.

Unfortunately, it is difficult to identify the impact of craft organization at the national level, because the number of cases is so limited. Each country's history reflects a unique configuration of structural, cultural, and political circumstances, many of which may contribute to international differences in labor movement development (Laslett and Lipset 1974; Lipset 1983). Moreover, each national labor movement developed its own, self-perpetuating style of labor organization (Dunlop 1977, pp. 307-9). The existence of powerful labor organizations makes it difficult to isolate underlying structural and cultural differences from the coercive and legitimating power of hegemonic organizations. For example, the A.F.L., once firmly established, could use selective incentives to reinforce its strategies, institutionalizing an "American" form of union — apolitical and "occupational."

One solution to these problems is to focus on local variation in a single country in the period before industrial relations were institutionalized. This is the approach taken in this study. At least until World War I, the promise of national labor organization was more important than its accomplishment in the United States. Even in the most powerful craft markets, uneven economic development forced national organizations to allow local variation to avoid losing members. In addition, before modern transportation and communication facilities, the scale of the country made it difficult to coordinate national actions (Ulman 1955, pp. 168-73; Sakolski 1902). Finally, workers' orientation to their local community limited their willingness to sacrifice local autonomy for the uncertain advantages of national organization (Bender 1978, pp. 108-17; Cassity 1979). The substantial local variation in labor relations in the nineteenth

century enables us to explore how existing organizational fields shaped subsequent development of the labor movement.

What types of organizational processes could link craft association and labor movement formation? The organizations literature provides several relevant ideas.

DiMaggio and Powell (1983) argue that existing organizations tend to constrain the form of subsequent organizations. They identify three types of institutional pressure that encourage new organizations to adopt accepted forms: first, established organizations favor conforming organizations when providing sponsorship, forming coalitions, or negotiating agreements; second, established organizations provide clear models; and third, emulating established organizations makes it easier for members to pursue careers spanning multiple organizations. Their argument suggests that established craft organizations are likely to structure the development of the labor movement by directly and indirectly encouraging industrial workers to adopt organizational strategies that complement established craft patterns of association.

Hannan and Freeman (1987; 1989, pp. 55-61, 97-105) make similar predictions, based on competitive pressures and resource depletion. Their arguments also suggest three ways in which established craft organization might impede efforts to form broad-based industrial unions: first, if craft association reduces profitability, employers will be forced to resist other workers' initiatives more vigorously; second, craft unions would defend the cultural primacy of a pattern of work organization in which craft workers and less-skilled workers were differentiated; third, craft workers organized on a narrow basis would be difficult to recruit for broadly-based organizations. In other words, even if ideologically neutral, craft organization would tend to channel less-skilled workers into narrow organizational forms. In situations where craft unions could enforce exclusive jurisdiction rules, it would be even more difficult for industrial unions to organize those crafts.

THE KNIGHTS OF LABOR

At the end of the nineteenth century, when technological changes in the manufacture of iron and steel were giving workers new, "industrial" interests, one national organization provided the obvious forum for expressing those interests: the Noble and Holy Order of the

Knights of Labor. The Order became the largest labor organization of the nineteenth century and the most successful broad working class movement in the United States before the 1930's. At its peak in 1886, the Knights enrolled over 750,000 workers, including 60,000 blacks and 65,000 women (Grob 1961, p. 53; Laurie 1989, p. 142; Levine 1983, p. 325). Membership declined rapidly that same year, after a bomb exploded in Haymarket Square during a massive, eight-hour campaign. Although the Order remained a powerful force in many areas through the 1890's, it never regained the membership or influence it had before that crisis.¹ Subsequently, less-skilled workers remained largely unorganized until the New Deal.

The Order provides an unusual opportunity to explore the impact of local organizational fields on the emergence of new forms of organization because it was decentralized enough to permit diverse forms of local organization to flourish. This tolerance for diversity reflected both its unusual history and the fact that the labor movement in the late nineteenth century lacked direction. The Knights began as a Philadelphia secret society in late 1869. When the Order spread beyond the Philadelphia area in the mid-1870's, this secrecy — which was intended to shield members from employers' retaliation — made centralized control difficult, and when secrecy was finally abandoned in 1881, the local autonomy it had fostered remained. The radical changes occurring on the factory floor and in the larger society also made it difficult for the Order's leaders to enforce a consistent tactical line. The inconsistency of the Order's directives and the minimal central funding also encouraged heterogeneous developments and local autonomy. Locals employed an extensive array of tactics to further their interests: cooperation, political action, boycotts, sympathetic strikes, arbitration, collective bargaining backed up by craft strikes, and sabotage.

Most important for the present analysis, workers affiliating with the Knights enjoyed wide latitude in how they organized, which

¹ Ware (1929) offers the most complete history of the Knights, and Grob (1969) provides the best overview of the Knights' ideology, although his treatment is flawed by his view that the Knights were "backward-looking." Recent histories draw on the Knights' diverse local experiences to provide a fuller picture of the Order's history and ideology (e.g., Fink 1983; Oestreicher 1986).

enables us to trace the effects of local conditions on organizing strategies. Members of each local assembly defined their own collective identity in terms of ethnicity and gender as well as occupation and industry. Practitioners of the same trade used different organizing strategies in different communities. For example, some "iron moulders" organized around their craft identity; others organized around their broader identity as skilled workers, like those who formed assemblies of "pattern makers and moulders"; still others joined with less-skilled workers to form assemblies of "iron foundry employees." In addition, some moulders probably joined "mixed" assemblies, which organized around workers' identity as members of a "producing class." Although national officials preferred the mixed strategy and would only grant official occupational status to locals that met stringent criteria, recent studies show that most members organized along occupational and industrial (called "trade") lines (Garlock 1974, pp. 54-6; Voss 1986, Chapter 3; 1988, pp. 336, 362; Oestreicher 1986, p. 118). Thus, the Knights offered workers a chance to organize on their own terms within a context of broader solidarity.

The Order's history in the iron and steel industry illustrates its organizational flexibility as well as its appeal to workers on both sides of the skill divide. The Order provided less-skilled iron and steel workers' first realistic chance to participate in an organized labor movement. After several Knights of Labor locals were organized, the Amalgamated liberalized national membership rules to allow laborers to join. However, few locals welcomed less-skilled members (Elbaum and Wilkinson 1979, p. 289). In contrast, within the Knights, nearly half of all locals incorporated less-skilled workers (Garlock 1973). Even more importantly, by the time the Knights peaked in 1886, less-skilled workers had acquired an organizational voice within the Knights in nearly a fifth of the 295 counties manufacturing iron and steel. At the same time, craft identities remained strong even among the skilled workers who joined the Knights. Craft assemblies dominated the early stages of the Knights' development and skilled workers continued to form craft locals throughout the Knights' history (Garlock 1973).

DATA

Our analyses are based on what happened from 1875-1895 in the 295 counties where iron and

steel were produced in the U.S. in 1880 (U.S. Bureau of the Census 1880). We begin our analysis in 1875 because the Knights did not effectively become a national organization until then. All variables measure conditions within a single county. Although the effective economic and social world did not always correspond exactly to a county, using smaller units probably underestimates the scale of integration during this period as frequently as using counties overestimates it. Moreover, counties are the smallest local units for which measures of industrial and population composition are readily available.

The data were collected from three sources. Demographic and industrial measures were gathered from the 1880 Census (United States Bureau of the Census 1880). Information on the Knights was taken from Jonathan Garlock (1973), who has compiled data on every local assembly mentioned in the important primary sources. He provides information on the location, founding and dissolution dates of each assembly, as well as on each assembly's occupational and demographic composition, and whether the local was officially designated as a mixed or trade assembly. Data on the skill content of nineteenth century jobs were obtained primarily from the Census Bureau's Special Report on Employees and Wages (U.S. Bureau of the Census 1903); in a few cases the U.S. Census Bureau Index to Occupations (1915) and a variety of historical sources were used to supplement this information.

To construct our organizational measures, we used all assemblies that Garlock identified as organizing particular occupations, whether they were officially designated as "trade" or "mixed" assemblies. We began by coding the skill levels of all occupations organized in each assembly using the Census Bureau's Special Report. The Special Report classified occupations based on how much "judgement, ability, experience, and supervisory duties" they required. Founders, puddlers, and moulders were typical "skilled" craft workers; bolt makers and machine tenders typical "semiskilled" workers; and laborers typical "unskilled" workers. We next classified each assembly as using a particular "organizing strategy" defined in terms of the variety of occupations pursued by its members. Table 1 provides a detailed breakdown of the range and skill level of jobs organized by individual trade assemblies within the iron and steel industry. As Table 1 indicates, some types of organizing strategies were far more common than others

Table 1. Knights of Labor "Trade" Assemblies in the Iron and Steel Industry by Detailed Organizing Strategy: 1869-1895

Type of Organizing Strategy	Number	Percent
Exclusive craft strategy	204	52
Single skilled occupation	179	45
Multiple skilled occupations	25	6
Incorporating less-skilled workers	192	48
<i>Quasi-industrial strategy</i>	92	23
Skilled and semiskilled occupations	15	4
Skilled and unskilled occupations	5	1
Skilled, semiskilled, unskilled occupations	12	3
Explicitly industrial or departmental	60	15
<i>Sectional Strategy</i>	100	25
Semiskilled occupations	86	22
Unskilled occupations	12	3
Semiskilled and unskilled occupations	2	1
Total	396	100

among iron and steel workers, but a wide variety of strategies was used. Since our focus in this paper is on the relationship between skilled workers and the other, "less-skilled" workers who were becoming increasingly important, we have ignored the common distinction between laborers (unskilled workers) and operatives (semiskilled workers) in our analyses. Consequently, we ultimately classified each assembly as using one of three basic organizing strategies: a "craft" strategy of enrolling only skilled workers; a "sectional, less-skilled" strategy of organizing unskilled and semiskilled workers but not craft workers; and a broad, "quasi-industrial" strategy offering membership to both skilled and less-skilled workers. Finally we constructed organizational histories for each county that indicate the types of organizing strategies present in that county at the beginning of each year from 1875-1895.

VARIABLES

Structural and Historical Context

Measures of the structural and historical context are included to control for the influence of non-organizational factors when examining the

impact of local organizational fields on subsequent organizational development.

Establishment size. Establishment size is defined for each county as the ratio of employment (in thousands) in the iron and steel industry to the number of iron and steel establishments. A large body of literature (e.g., Elster 1985, p. 355; Lipset, Trow, and Coleman 1962, pp. 170-86; Gordon, Edwards, and Reich 1982, pp. 116-26) suggests that large factories facilitate labor organization by providing a critical mass of workers with common interests who are in regular communication with each other. Moreover, in large factories, there are more workers to initiate organization (cf. Spilerman 1970). Consequently, we expect more rapid organization of less-skilled workers where factories are larger.

Number of establishments. This variable is defined as the number of iron and steel establishments in each county in 1880 (in tens). Resource mobilization theory suggests that having multiple establishments in a community will encourage rapid labor organization. First, workers' dependency makes it hard to organize where there are few employment options. Second, if leadership develops within factories, more establishments means more individuals accustomed to taking the initiative. However, since an assembly could organize workers from several establishments, the importance of this factor may say more about organization in the Knights than about resource mobilization theory.

Organizational ecology leads us to expect more organizational diversity where more firms are operating (Carroll 1985). Since craft organization formed first, this suggests that areas with few establishments will be less likely to support the newer, quasi-industrial strategies.

Wage Differential. This measure is defined as the ratio of craft wages to common labor wages for iron and steel workers in each county. (Missing values were assigned the mean value.) Small wage differentials suggest that craft and less-skilled workers occupy relatively similar situations, which should encourage craft workers to support other workers' organizational efforts. Consequently, we expect more rapid organization of less-skilled workers and a greater chance that organizations will employ industrial rather than sectional organizing strategies where wage differentials are low.

Population Density. Population density is defined as the county population (in 100,000s)

divided by the county area in square miles. Historically, many social movements (especially class movements) spread more rapidly in densely populated areas because urbanization facilitated communication among workers and reduced workers' dependency by making available alternative sources of employment, food, and shelter (Fischer 1984, pp. 123-6; Shorter and Tilly 1978, pp. 267-83). Thus, we expect more rapid organizational formation in more densely settled areas.

Ethnic Diversity. This measure is defined as $-\sum F_e^2$, where F_e is the fraction of the total county population born in each country e and the summation is over all countries listed in the census tabulation (U.S. Bureau of the Census 1880; Taagepera and Ray 1977; Lieberman 1969). Ethnic diversity has been a major impediment to labor organization in the U.S. (Hofstadter 1955, pp. 180-4; Rosenblum 1973, pp. 151-4; Kolko 1976, pp. 68-9). Since craft workers' ethnic origins often differed from the ethnic origins of the operatives and laborers with whom they worked, ethnic divisions tended to reinforce divisions along skill lines, reducing craft sponsorship of other workers' mobilization (Rothbart 1988, pp. 171-211). Thus, we expect less rapid organization among less-skilled workers in ethnically diverse communities and a greater chance of sectional organizing strategies when less-skilled workers do organize.

1886. A dummy variable for the year 1886 was included to avoid confounding the impact of the local organizational field with national developments. This year marked a crisis for the U.S. labor movement and for the Knights. In 1886, there was a massive increase in the rate of organization of the Knights coupled with a dramatic shift towards organizations incorporating less-skilled workers. These developments are consistent with Goldstone's (1980) suggestion that protest organizations are more likely to be successful during periods of crisis. Hannan and Freeman (1989, pp. 126-7) also contend that crises open the way for new forms of organization.

Initially we included a simple secular "trend" term. However, there was no secular trend either in rates of organization or in the odds on adopting particular strategies once we controlled for "structural" factors. Since it was not feasible to control simultaneously for 1886 and a secular trend, we eliminated the trend term in favor of the empirically more powerful and substantively more meaningful "1886" effect.

The Organizational Field

The organizational variables describe the types of Knights assemblies located in each county at the beginning of each year. We measure the presence of three different trade organizing strategies in the iron and steel industry and the presence of any trade based organization outside of iron and steel.

Craft organization. A dummy variable indicates whether any Knights assembly organized metal workers in the county on an exclusive craft basis at the beginning of the year.

Sectional organization of the less-skilled. A dummy variable indicates whether at least one Knights assembly organized less-skilled metal workers on a sectional basis in the county at the beginning of the year.

Quasi-industrial organization. A dummy variable indicates whether any Knights assembly organized both skilled and less-skilled metal workers in the county at the beginning of the year.

Trade organization among non-metal workers. A dummy variable indicates whether at least one Knights trade organization of non-metal workers was present in the county at the beginning of the year.

One type of local Knights of Labor organization, the mixed assembly, is omitted from the models reported here for two reasons. First, the heterogeneity of mixed assemblies makes it difficult to generate any clear hypotheses concerning their impact. The rigid criteria the Knights imposed for official "trade" designation made the "mixed" designation a residual category. Mixed assemblies were concentrated largely in rural areas and included assemblies using both broad and narrow organizing strategies (Garlock 1974, p. 119; New Jersey Bureau of Labor Statistics 1888). Moreover, mixed assemblies were more likely to incorporate members of the middle class and to emphasize political rather than trade union strategies. Second, first order relationships between mixed and trade forms were very weak, and including the presence of mixed assemblies did not alter the predictive power of our models or the impact of other features of the organizational field.

ANALYTICAL METHODS

Two considerations shape our analytic design. First, we expect that existing craft associations affect the fate of industrial labor movements

both by altering the rate at which less-skilled workers are recruited and by shaping the organizational strategies used to incorporate these workers. Second, we want to explore the possibility that early forms of organization actually open new paths of movement development rather than merely transmitting environmental influences (Connell 1989; David 1988, 1989). Focusing on a single industry — iron and steel — partially controls for the impact of varying conditions, but even within this industry, variation in local environments could induce a spurious association between early craft organization and the course of later industrial movements.

We use event history analysis to identify the situations that facilitate organizing less-skilled iron workers (Tuma and Hannan 1984). The event history analysis (reported in Table 2) models variation among counties and over time in the annual rates at which the Knights incorporated less-skilled workers. Specifically, we use a loglinear specification to estimate how vectors of independent variables altered the rate of emergence of Knights of Labor organization incorporating less-skilled iron and steel workers, where the "rate of emergence" is defined as the instantaneous probability of forming one or more such locals in a county where none exist.² By definition, when either sectional or quasi-industrial strategies serve less-skilled iron and steel workers in a county, that county is eliminated from the risk set for these analyses. There were 67 cases of organizational emergence over the course of the 5241 county-years at risk for this event.

We use logistic regression to identify how different situations shaped the expression of mobilized workers' interests. The logistic analysis (reported in Table 3 below) models variation in the organizing strategies adopted by all 189

trade locals that included less-skilled iron and steel workers and were founded between 1875 and 1895 in the counties producing iron or steel as of 1880.³ These 189 locals include both the first assemblies to appear in previously unorganized counties — that is, those which indicate organizational emergence — and assemblies that formed in counties where less-skilled iron workers had already established locals. As Table 1 indicates, these assemblies were almost equally likely to pursue sectional and quasi-industrial strategies.

Each of the analyses proceeds in two stages so that we can assess the linkage between initial organization and subsequent development. First, we form multivariate "structural," baseline models that examine the impact of demographic and industrial variables on less-skilled workers' incorporation into the Knights. They also control for historical national variation in the Order's development by including a dummy variable for 1886. Second, we create more inclusive models that add dummy variables describing the local organizational field. Comparing these hierarchical models enables us to assess the impact of the Knights early organizational development on its later growth. We also report reduced forms of the more inclusive models, which eliminate clearly non-significant variables in order to stabilize coefficient estimates for the significant factors.

FINDINGS

The Rate at which the Knights of Labor Emerged

Table 2 presents the results of the event history analyses. In addition to reporting coefficients and standard errors for the three models we fit, this table includes an "impact" column based on the final model (2c). This indicates the factor by which a "standard change" in the value of each independent variable multiplies the rate of organizational emergence when other variables are held constant at their mean values. The standard change used is the shift from "0" to "1" for dummy variables, and the shift from one

² A major advantage of the loglinear specification is that all effects are expressed as proportional to the rate of emergence. The resulting equations take the form: $\ln r(t) = \sum_j \beta_j x_j + e$, where $r(t)$, the rate at which Knights of Labor organization emerges, is defined as

$$\lim_{t^* \rightarrow t} [P_o(t, t^*) / (t^* - t)],$$

where $P_o(u, v)$ is the probability of organization emerging between times u and v , with time measured in years; and x_j is a vector of independent variables. Maximum likelihood estimates of these equations were obtained using RATE (Tuma 1980).

³ Fienberg (1977) provides further details on logistic regression models, which predict the logit (log odds) on a particular event E occurring. They are of the form, $l(E) = \sum_j \beta_j x_j + e$, where x_j is the vector of predictors and $l(E)$ is the natural log of the odds on E , $\ln [P(E)/(1-P(E))]$.

Table 2. Impact of the Local Structural Context and Organizational Field on the Rate of Emergence of Knights of Labor Organization Among Less-Skilled Iron Workers: 1875-1895

Variables	Model 2a	Model 2b	Model 2c	Impact
	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	
<i>Intercept</i>	-8.67 (.98)	-8.54 (1.00)	-8.46 (1.00)	—
<i>Structural context</i>				
Establishment size (1000s)	1.26 (.65)	.44 (.69)	—	—
No. of establishments (10s)	.38** (.14)	.15 (.16)	—	—
Wage differential	.39 (.20)	.28 (.21)	.27 (.21)	1.37
Population density (100,000s)	4.90** (1.40)	2.72 (1.48)	2.42 (1.45)	1.14
Ethnic diversity	-2.96** (.92)	-1.84* (.92)	-1.92* (.92)	.40
"1886"	2.68** (.25)	2.34** (.26)	2.32** (.25)	10.16
<i>Organizational field*</i>				
Craft strategy, metal workers	—	.65 (.36)	.78* (.34)	2.17
Any trade strategy, non-metal workers	—	2.05** (.39)	2.10** (.39)	8.14
χ^2 ^b (d.f.)	119.35 (6)	163.33 (8)	163.12 (6)	

* $p < .05$ ** $p < .01$ (two-tailed tests)

*The organizational field is depicted in terms of whether assemblies using particular organizing strategies were operating in the county at the beginning of the calendar year.

^b χ^2 , -2 log likelihood, measures improvement in fit produced by substituting a maximum likelihood estimate of a model including listed covariates for the null model assuming a constant rate.

Note: 67 events; 295 total spells covering 5241 county-years. Maximum likelihood estimates from event history analyses. All models fit significantly better than a constant rate model (.001 level). Definitions of emergence and independent variables are in text. Including information on the organizational field significantly improved the fit (χ^2 associated with substituting 2b for 2a is 43.98 with 2 d.f.), but the more complete model 2b is not significantly better than model 2c (χ^2 of .21, with 4 d.f.).

standard deviation below the mean to one standard deviation above the mean for continuous variables.

Model 2a estimates the rate at which the Knights organization incorporated less-skilled workers as a function of structural and historical circumstances. Three structural factors had the predicted effects. First, the Knights spread more rapidly where there were more factories, consistent with the assumption that access to a large resource base facilitates organization. Second, the Knights spread faster in more urbanized

areas. Finally, the Knights organized more rapidly in ethnically homogeneous communities, which suggests that informal organizational ties facilitate mobilization. In addition to documenting these structural effects, Model 2a identifies the well known 1886 boom in organization.

During the first decade after the Knights began organizing iron and steel workers, they established several times as many craft locals as locals incorporating less-skilled workers. Consequently, craft organization was present in many counties by the time the Knights began

seriously organizing less-skilled workers in this industry. In this context, the internal dynamics of the Knights dominated local structural conditions. Model 2b, which adds information on the local organizational field to Model 2a, fits significantly better. Prior organization of other workers in the community — either employees in other industries or iron and steel craft workers — significantly increased the rate at which organization emerged among less-skilled iron and steel workers. The Knights organized less-skilled iron workers eight times as rapidly once they had organized at least one other local industry, and twice as rapidly again once they had organized local iron craftsmen.

Moreover, the local organizational field constructed by the Knights transmitted a large share of the community influences on the rate of organizational emergence. With the possible exception of ethnic diversity, community structure had negligible direct effects in Models 2b and 2c: the effect of establishment size vanishes, the direct effect of the number of establishments is halved, and the coefficients associated with population density and ethnic diversity are substantially reduced.

In contrast, the impact of 1886 on the Order's development does not reflect the prior establishment of an organizational matrix. The impact of this crisis is essentially stable whether or not we allow for local organization, and the impact of local organization remains nearly invariant whether or not one allows for the differences in 1886. We also tested whether 1886 confounded the analysis by running the three models in Table 2 without the "1886" measure. The resulting models had much lower overall predictive power, but supported all of the arguments about the effects of particular variables reported here.

Organizing Strategy

Table 3 reports the results of the logistic analyses. Once again, we report coefficients and asymptotic standard errors for the three models we fit and a measure of the impact of a standard change (defined as above) in the value of each independent variable according to the final model (3c). The impact is the amount by which a standard change multiplies the odds on a new assembly that incorporates less-skilled iron workers selecting a quasi-industrial rather than a narrow, sectional strategy.

For Knights of Labor assemblies that organized less-skilled iron and steel workers and were

founded from 1875-1895, Model 3a estimates the odds on adopting quasi-industrial rather than sectional strategies as a function of structural and historical circumstances. Economic and demographic conditions had a relatively minor impact on the organizing strategies adopted by assemblies incorporating less-skilled workers. Only the number of establishments significantly altered the odds on these assemblies' adopting quasi-industrial rather than sectional organizing strategies. The odds in favor of a quasi-industrial form were 4/3 as great in a county with 11 factories, which was average, as in a county containing only one plant.

Whereas structural conditions had far less impact on strategy selection than on the rate of organization, the existing organizational field affected the selection of organizing strategies more dramatically than it affected the rate of organization. Model 3b, which adds information on the organizational field, improves significantly on Model 3a. More variables appear in Model 3b than in Model 2b because the event history analyses are limited to the emergence of organization among less-skilled workers who currently lack formal organizational vehicles. This means, by definition, that when either sectional or quasi-industrial strategies serve less-skilled iron or steel workers in a county, that county is eliminated from the risk set for these analyses.

The pattern of organizational effects substantiates the importance of craft workers' early organizing strategies in shaping later movement development. When we compare counties where skilled iron and steel workers organize by themselves at least part of the time (i.e., form at least one craft assembly) to other counties where no craft assembly is present, we find that the odds on less-skilled workers organizing by themselves rather than within broader assemblies are 2.4 times as high.⁴ On the other hand, once craft workers in a county join less-skilled workers to form a quasi-industrial assembly, the odds on additional locals likewise adopting a broad strategy more than tripled. The importance of the way craft workers had been incorporated into the Order is highlighted by the insignificance of other types of assemblies — neither established locals in other industrial sectors nor sectional associations of less-skilled iron workers af-

⁴ This value, 2.4, is the inverse of the reported impact of prior craft organization on the odds on adopting a quasi-industrial strategy in Model 3c.

Table 3. Impact of the Local Structural Context and Organizational Field on the Odds that Knights' Assemblies that Incorporate Less-Skilled Iron Workers Adopt a Quasi-Industrial Rather Than Sectional Strategy: 1875-1895

Variables	Model 3a	Model 3b	Model 3c	
	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Impact
<i>Intercept</i>	-1.12 (1.70)	-1.72 (1.90)	-.38 (.23)	---
<i>Structural context</i>				
Establishment Size (1000s)	-.88 (1.06)	-.51 (1.18)	---	---
No. of Establishments (10s)	.38** (.12)	.44** (.16)	.32* (.13)	2.79
Wage Differential	-.18 (.39)	.16 (.42)	---	---
Population Density (100,000s)	-1.00 (.88)	1.41 (1.23)	---	---
Ethnic Diversity	-1.16 (1.73)	-.06 (1.85)	---	---
"1886"	.36 (.32)	.38 (.34)	---	---
<i>Organizational field^a</i>				
Craft strategy, metal workers	---	-1.09* (.48)	-.87* (.35)	.42
Quasi-industrial strategy, metal workers	---	1.34** (.42)	1.28** (.38)	3.60
Less-skilled sectional strategy, metal workers	---	-.40 (.52)	---	---
Any trade strategy, non-metal workers	---	.86 (.88)	---	---
χ^2 ^b (d.f.)	15.89** (6)	30.56** (10)	26.84** (3)	

* $p < .05$ ** $p < .01$ (two-tailed tests)^a Types of organizing strategies established in the county by the beginning of the calendar year.^b χ^2 , -2 log likelihood, measures improvement in fit produced by substituting a maximum likelihood estimate of a model including listed covariates for the null model assuming a constant rate.

Note: N=189. Maximum likelihood estimates from logistic analyses. All models fit significantly better than a constant rate model (significance of improvement is .025 for 3a; .001 for 3b, 3c). Including information on the organizational field significantly improved the fit (χ^2 associated with substituting 3b for 3c is 14.67 with 4 d.f.), but the more complete model 3b is not significantly better than model 3c (χ^2 of 3.72, with 4 d.f.).

affected the organizational strategy used to incorporate less-skilled iron workers.

Differences between craft and other workers' experiences and resources probably account for the fact that sectional organizations of skilled workers affected later development much more than sectional associations of less-skilled workers did. Craft assemblies drew on long traditions of trade organization, and some craft assemblies within the Knights originally formed as craft

unions outside the Knights. Their members formed relatively solid, self-conscious groups. Moreover, although technological change was reducing their power, craft associations remained much more effective than sectional associations of operatives and machine tenders (Ulman 1955, pp. 305-33). Consequently, it was probably easier both to detach less-skilled workers from sectional assemblies and to recruit less-skilled workers' sectional assemblies *en bloc*.

The dramatic impact of established quasi-industrial assemblies supports organizational ecology arguments about the liability of newness, as well as Tilly's (1986, pp. 3-4) argument that repertoires of contention resist change. Despite both the Knights' ideological commitment to broad organization and the greater promise quasi-industrial forms held for less-skilled workers, early organization within the Knights predominantly employed the narrow forms traditionally used by labor organizations. Where no quasi-industrial organization was present, introducing this form was difficult, but even a single exemplar made it much easier for subsequent associations to adopt the quasi-industrial strategy.

Active sponsorship may also have encouraged new assemblies to adopt quasi-industrial forms in communities where this form was in use. The extreme difficulty of starting new organizations, particularly if the forms are also new (Stinchcombe 1965, pp. 148-50) has been established. As Gamson (1972, pp. 55-71) demonstrated, sponsorship can help movement organizations to overcome this liability of newness. Although Gamson emphasized individual sponsorship, sponsorship by existing organizations is probably even more important for labor and other movements whose members have limited resources. Although direct suppression of broadly based mobilization could produce a similar pattern, the Knights' explicit commitment to organizing "producers" as a class — which contrasted with the philosophy of most national trade unions, including the Amalgamated — makes this interpretation less plausible.

In sum, whatever role the ecological and industrial structure played in shaping the Knights' early development, the local organizational field generated during that initial phase dominated later development. Rates of organization varied with local structural conditions, but most of these structural effects were mediated by the forms of organization that had already been established. Similarly, structural conditions played a minor role and the existing organizational field a dramatic part in shaping individual assemblies' strategic choices.

CONCLUSIONS

The analyses reported here have important implications for social movements research as well as for the comparative study of labor.

Students of collective action need to pay more attention to the ways in which organizational fields shape the development of social movements. The analyses also suggest that international variation in labor movements is unlikely to correspond to societal variation in any simple fashion.

Existing organization within the Knights of Labor affected mobilization around new working-class interests in two ways. First, the presence of any trade local encouraged the incorporation of less-skilled workers into the Knights. Second, the types of organization represented in the local organizational field helped to determine the organizing strategies used to incorporate less-skilled workers. Organization in other industries provided a neutral support for less-skilled iron workers' mobilization, but organizations within the industry encouraged emerging locals to conform to existing organizational strategies. Craft organization channeled less-skilled workers' assemblies into sectional forms, whereas established quasi-industrial organization encouraged additional, broad organization.

The second finding deserves emphasis because it explains why pre-existing organization is sometimes less supportive of movement formation than existing resource mobilization accounts might suggest.⁵ Organization, particularly formal organization, is rarely a neutral tool because people are never simply "organized," they belong to concrete associations. The characteristics of such associations have important consequences for social movements, both because formal organizations shape the world view and actions of their members, and because they limit the form of subsequent organization. In the Knights, as in labor movements elsewhere, skilled workers established unions much more rapidly than other workers, partially because they drew upon long traditions of craft solidarity that pre-dated the Order. Once established, craft locals encouraged the organization of less-skilled workers, but steered these new organizations into forms that limited the Knights' potential.

⁵ Piven and Cloward (1979) also argue that organizations often undermine social movements, but they highlight a different process than the one emphasized here. According to them, poor people should not waste precious resources building organizations, because they will lack the resources to sustain these organizations, which will consequently be co-opted if they last.

Taken together, our findings suggest that when massive social change creates new interests, organizational dynamics play a key role in shaping social movements. Although radical alterations in the conditions of everyday life tend to undermine existing collective organization, previously organized social groups typically retain disproportionate organizational resources during the early phases of social change. As a result, pre-existing organization is an important factor in facilitating mobilization for new interest groups, but the segmenting effects of such organization often make the benefits ambiguous.

Two conditions must be met before pre-existing organization can provide a wholly supportive matrix for mobilizing new interest groups. First, the emerging common interest must clearly dominate the subgroup differences that traditionally separated the organized from the unorganized. Second, the traditionally well-organized subgroups must remain sufficiently intact to act effectively.

These conditions are rarely met simultaneously. Typically, privileged subgroups keep trying to preserve their traditional prerogatives until disastrous campaigns destroy most of their collective resources. By the time they recognize that their privileges are indefensible, they usually have few resources besides their traditions and group loyalty — difficult resources to convert to new ends. In the interim, since members can use the established organizations to express their interests, they are less willing to join new organizations. Meanwhile, political realism encourages individuals who want to participate in collective action to join the established organizations and participate in the movement activities these organizations sponsor. Thus, the organizational strength of subgroups can actually undermine the ability of both the organized and the unorganized to defend their interests under conditions of rapid social change.

These organizational dynamics have important implications for our understanding of labor movement development in the U.S. and elsewhere. Most comparative studies of labor treat the A.F.L. as the characteristic American form of labor organization and look for direct correspondences between its form and structural or cultural features of American society. The enormous variation in working class formation found in societies with similar political and economic characteristics has been treated as evidence that fundamental structural or cultural

features predispose each national labor movement toward either broad, political strategies or narrow, economic strategies. Our analyses suggest that this approach is problematic. The role organizational fields play in structuring subsequent development makes the question of how well the A.F.L. fit American workers' needs or desires unanswerable. Once the A.F.L. achieved hegemony, even considerable change in fundamental structural conditions would probably not have substantially altered the movement's development. Thus, in order to identify the sources of international variation in labor movement development, it is important to focus on the period before a mature organizational field emerged within the labor movement.

The extensive organizational structuring we found suggests the need to approach the question of national variation historically. The formation and survival of specific organizations reflect a variety of historical contingencies; not just long-run structural conditions. Thus, if a particular organization's presence at a given moment plays a major role in determining whether and how workers organize themselves, short-lived differences in structural conduciveness can generate durable differences in labor movement strategy. Instead of trying to predict long-term national differences, we should focus on the contextual factors that shaped organizational development in the short run and use local variation to clarify the process of social movement formation.

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CULTURAL CAPITAL, STUDENT ACHIEVEMENT, AND EDUCATIONAL REPRODUCTION: THE CASE OF GREECE*

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This paper studies the role of cultural capital in the relationship between social background inequalities and educational attainment. Using data from a national sample of Greek high-school seniors, we assess a model that cultural capital mediates the relationships of school success with family class position and socioeconomic status. While the analysis finds that both father's class position and family socioeconomic status determine a student's cultural capital, we find no evidence that cultural capital has direct or indirect effects on educational achievement. While reproduction of the social hierarchy in Greece occurs through schooling, student ability and effort are the major mechanisms maintaining and legitimating the process.

While the importance of education in the reproduction of the social hierarchy has often been demonstrated, a precise understanding of its role has been elusive. Comparative studies reveal considerable variation in educational processes, but lack sufficient information to systematically map these variations. Three sources of variation appear in these studies: (1) The effect of education on reproduction of class position depends on the definition of class. Defining class by ownership and authority relations in the workplace yields different results than when class is defined by occupational prestige or status score (Katsillis 1987; Robinson and Garnier 1985). (2) Differences are found in the effects of particular mechanisms underlying educational reproduction in different countries resulting from the extent to which they are stratified into curricular tracks (Bidwell and Friedkin 1988). (3) The role of education in social reproduction and the effects of the mechanisms underlying educational reproduction vary by sex (DiMaggio 1982; Robinson and Garnier 1985).

To develop an understanding of educational

reproduction, studies are needed of how specific mechanisms operate in different national educational systems, for different class positions and occupational groups, and for each sex. This study of Greece analyzes the role of one particular mechanism, cultural capital, in reproducing positions defined in terms of class and occupational prestige, separately for males and females.

Cultural capital, defined as competence in a society's high status culture, its behavior, habits, and attitudes, is often considered an important mechanism in reproduction of educational and social hierarchies. As described by Bourdieu (Bourdieu 1977; Bourdieu and Passeron 1977), cultural capital is the vehicle through which background inequalities are translated into differential academic rewards and which in turn lead to unequal social and economic rewards, thereby maintaining and legitimizing the process. The cultural capital theory argues that the culture transmitted and rewarded by the educational system reflects the culture of the dominant class. To acquire cultural capital, the student must have the capacity to receive and decode it. But schools do not provide the techniques for receiving and decoding culture, even though they implicitly demand them from everyone. Consequently, the acquisition of cultural capital, and consequent access to academic rewards, depends on the cultural capital transmitted by the family. The higher the social class of the family, the closer the culture it transmits is to the dominant culture, and the greater the attendant academic rewards (Bourdieu 1977; Bourdieu and Passeron 1977).

The cultural capital hypothesis is based on the

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finding that family background is reflected in differential academic rewards, a finding termed the educational reproduction relationship. A causal ordering for the reproduction process is (1) family background directly affects cultural capital, the background effect, (2) cultural capital directly affects academic rewards, the cultural capital effect, hence (3) family background affects academic rewards indirectly through cultural capital, the transformation relationship. The term social reproduction means that social hierarchies (class and/or status positions) are ultimately reproduced, in the sense that children of socially advantaged parents are in turn socially advantaged. This paper focuses on the educational reproduction part of that process, in which children of socially advantaged parents become educationally advantaged. Empirically, educational reproduction is demonstrated in the extent to which family background affects academic rewards, regardless of the intervening processes. This paper assesses the role of the cultural capital mechanism as one of the intervening processes.

Past empirical evidence on these relationships has been inconsistent, not always supporting the cultural capital hypothesis. Bourdieu's (1977) study in France found correlations between students' family background and their possession of cultural capital, and between cultural capital and educational attainment; but this study did not test whether cultural capital was an intervening variable in the transformation of background inequalities into educational attainments. DiMaggio, analyzing data from the United States, found an effect of cultural capital on both high school grades (1982), and school attainment (DiMaggio and Mohr 1985); but found only a weak correlation between family background, measured by father's educational attainment, and cultural capital and academic achievement.¹ Finally, Robinson and Garnier (1985), in a study which contradicts Bourdieu's work, found that in France cultural capital had little effect on class reproduction, even though they used educational attainment itself to measure cultural capital. Thus, no empirical study has found all three of the relationships required in order to show that cultural capital is a mechanism of educational or social reproduction.

¹ DiMaggio (1982) did not analyze a model in which social background affected cultural capital, but rather reported that there was a low correlation between these two variables.

Two possible explanations for these inconsistencies are: (1) the cultural capital process differs in different countries, so more comparative studies are required to see if these differences are systematic; or (2) the process itself may not actually be as important as thought and therefore not of sufficient empirical importance to show up in these studies.

This study evaluates the cultural capital hypothesis with data obtained from a national probability sample of public high school seniors in Greece. According to Bourdieu (1977), cultural capital becomes an important intervening variable as a society becomes more democratic and demands for equality of opportunity and meritocratic selection increase. Under these conditions, the reproduction of family background through direct mechanisms such as the transfer of property rights, inheritance, and promotion based on class privilege loses its legitimacy, leading to the emergence of indirect mechanisms of reproduction, particularly those that work through education (Bourdieu and Boltanski 1978; Robinson and Garnier 1985). Greece currently exemplifies these characteristics, and equality of educational opportunity has been an important concern of the Greek state.

Two features of the highly selective Greek educational system may intensify the importance of indirect mechanisms of reproduction such as cultural capital. First, entrance into a college or university school depends almost exclusively on high school grades and a national test, with little room for informal mechanisms of direct class bias to operate. And second, since education is free from elementary school through university (including free books for all university students and meals for the economically disadvantaged), the Greek system lacks the simple direct mechanism of reproduction, the ability to pay for schooling, which is present in the United States and other countries.

For the cultural capital process to be supported, children from higher social strata must in fact possess greater cultural capital than children from lower social strata. If such a relationship does not exist, cultural capital could not function as an intervening mechanism regardless of its intrinsic importance for educational or occupational achievement (DiMaggio 1982).²

² Under this pattern, cultural capital would be part of a process of cultural mobility but not part of a process of cultural reproduction. This is DiMaggio's (1982) distinction.

This requirement is more likely to exist in Greece and other European countries than in the United States, since participation in high culture seems to be more essential for the acquisition of high status in Europe than in the United States. Consequently, parents from high status groups in Greece are more likely to ensure that this culture is transmitted to their children, since they see it as indispensable for the transmission of their status. Thus, both the structure of Greek society and its educational system provide the necessary conditions under which we expect to find cultural capital operating as an important mechanism of educational reproduction.

DATA AND MEASURES

Data were collected in 1984 for 395 seniors from Greek public high schools (excluding night and experimental high schools, which account for only 3 percent of the student population), selected by a single-stage stratified cluster sampling technique. Private schools were not included because of their small number and because there was no reason to believe that the process of educational success differs between private and public schools.³ Twelve public high schools were randomly selected from three residential strata (Metropolitan Areas, Prefectural Capitals, and Other Towns and Villages), so that the number of sampled students in each stratum was proportional to the number of students in that stratum. Questionnaires were administered to all seniors present at each school. Questionnaires were completed by nine schools, with one school in each stratum not responding. School principals provided the eleventh grade GPAs. The number of completed questionnaires from the first (Metropolitan Areas) and third (Other Towns and Villages) strata corresponded to numbers provided by the

Ministry of Education and the school principals. The middle stratum (Prefectural Capitals) was underrepresented, because of missing information in one of the schools completing the questionnaires. This problem is dealt with by controlling for place of residence and by estimating effects separately for each residential location.⁴

Cultural capital is a factor score constructed from measures of student participation in a variety of activities of high culture. Following a procedure pioneered by Dimaggio, a VARI-MAX rotated solution was used to factor analyze a set of variables including high culture and other activities to determine whether the cultural capital variables clustered together. High culture activities reflecting cultural capital included attendance at the theater and lectures, and visits to museums and galleries.⁵ These are among the most important indicators of cultural capital in France and the United States (see Bourdieu 1977; DiMaggio 1982) and this appears to hold in Greece as well.

Academic achievement (GPA) is measured by student grade-point averages in eleventh grade. In Greece, high school grades are one of the most important determinants of admission to higher education. While twelfth grade GPA and national test scores at the end of the senior year weigh more for entering college or university, they are based on different curricula corresponding to different academic tracks in the senior year, which prevents comparing students across tracks. For this reason, eleventh grade GPA was used to provide a standard measure for all students.⁶ Part of the analysis uses eleventh grade marks separately for language (average of ancient and modern Greek marks), mathematics (average of algebra and geometry marks), science (average of physics and chemistry marks) and history.

³ This exclusion would be problematic for our study only if the private school students from advantaged social backgrounds were more likely to have their grades directly determined by cultural capital than similar students in public schools. But neither our knowledge of the Greek system nor the related literature implies such a relationship. Private secondary schools in Greece have traditionally played a role quite different from such schools in the United States. Not only are they few in number but they have not generally been of higher quality than public schools. Unlike the United States, there is no set of elite private secondary schools which cater to families of high social class backgrounds.

⁴ The number of respondents in each residential stratum were: Metropolitan Areas, 175; Prefectural Capitals, 65; Other Towns/Villages, 155.

⁵ To measure theater, museum, art gallery and lectures visits, students were asked to indicate how many times they had attended one of the above in the last three years. These measures are similar to those used in Project Talent. They do not include school activities (tables available from the authors).

⁶ The grade-point average (GPA) includes grades in the following subjects: ancient Greek, modern Greek, algebra, geometry, physics, chemistry, history, psychology, cosmography, religion, foreign language, and physical education.

Father's class was measured using the scheme developed by Wright and Perrone (1977) that classifies individuals into four categories: bourgeoisie, managers/supervisors, petty bourgeoisie and workers, based on the ownership and control over labor power. Worker was the omitted category in the analysis.

Family socioeconomic status was operationalized as the first principal component⁷ of father's occupation, father's and mother's education and family income. The Treiman Standard Occupational Prestige Scale (Treiman 1977) was used to code father's occupation. To measure parents' education, nine categories ranging from "did not attend school" (=1) to "some graduate studies" (=9) were used. Family income was measured in thousands of drachmas per month (approximately equal to \$8.00).

Place of residence was operationalized as the sum of two variables, the place where students lived most of their first 12 years and the place where their high school is located. This measure is preferable to simply "current residence" because it considers both the childhood environment, which is crucial for the early effects of residence, and the "best" environment most of the students are exposed to, whether they live in the town where the high school is located or commute from a neighboring town. Three categories were used for both residence variables: (a) Metropolitan Areas (Athens, Pireaus, and Thessalonike), coded 3; (b) Prefectural Capitals, coded 2; (c) Other Towns or Villages, coded 1.

Previous achievement is the average of the elementary and junior high school diploma GPA's. These two grades are used because students are more likely to remember them than other grades, and they are from different schools, different teachers, and from two rather different time points. Thus, they are likely to capture underlying, stable general ability

⁷ Principal components was used instead of factor analysis because it does not require any assumption about the underlying structure of the observed variables. Because of the relatively large number of missing values for family income (N=162), the index used was the first principal component of all four variables for those cases reporting income, and the first principal component of the other three variables for cases missing income. In both instances, the index was based on cases for which none of the other variables was missing. For the construction of the other indices as well as the analysis in this study, we used only cases for which none of the variables was missing.

Table 1. Regression Coefficients of the Exogenous Determinants of Student GPA

Exogenous Variable	Regression Coefficient	Standard Error
Residence	.141	.229
Sex	.607**	.219
Family SES	.719**	.111
Bourgeois	.217	.312
Manager	.305	.342
Petty bourgeois	.214	.280
(Constant)	14.798	.935
R ²	.131	

** $p < .01$

(Jencks, Crouse, and Mueser 1983). Direct measures of ability are not available because intelligence or aptitude tests are not given in Greek high schools.⁸

Student effort was measured as the average time a student spends per day on school-related homework. Sex was also included in our models, coded 0 for males and 1 for females.

FINDINGS

The Educational Reproduction Relationship

Do academic rewards in the Greek educational system reflect family background inequalities? To answer this question, we regress student academic achievement on its major exogenous determinants in Greece: family background, sex, and place of residence (Katsillis 1987; Psacharopoulos and Soumelis 1979). Results are presented in Table 1.

Two different measures of family background, father's class position and family socioeconomic status are used. In his theoretical arguments, Bourdieu refers to class in terms of relationships of ownership; but in his empirical work, he uses father's education and other socioeconomic characteristics, more indicative of status than class. The Robinson and Garnier study of France, the one analysis that used both class and status measures, found independent effects of these aspects of family background.

⁸ The elementary school diploma grade was multiplied by 2 before the average was calculated to obtain equal scales, since elementary schools grade on a scale of 0 to 10 with 5 being the lowest passing grade, while high schools grade on a scale of 0 to 20 with 10 being the lowest passing grade.

While sex has been included in a number of models of achievement and attainment with varying results (Heyneman and Loxey 1982; Alexander, Cook, and McDill 1978), most evidence indicates that males have higher mathematics achievement than females, while females have higher reading and verbal achievement than males (Bridge, Judd, and Moock 1979). Psacharopoulos and Soumelis (1979) found that male Greek high school students have higher achievement than females. So sex is an exogenous variable that must be included in a study of academic achievement, especially when attempting to assess other exogenous influences.

Evidence on the relationship between place of residence and educational attainment is inconclusive. A review of four national surveys found that the correlation between place of residence (farm-nonfarm, South-non-South) and education ranged from .191 to .324 (Jencks et al. 1979). In their study of Greek high school students, Psacharopoulos and Soumelis (1979) found that place of residence (urban-nonurban) had no significant effect on students' grades but was related to their educational plans. The inclusion of place of residence is necessary for determining the effect of family background on education because it controls for influences that may be related to, but do not reflect family background as such. For example, a few years ago, more than half of all Greek elementary schools (all located in small remote villages) had one or two teachers teaching all subjects to six grades (Gerou 1981). Without a control for place of residence, any effects of the quality of elementary schooling might be attributed to family background, since most of the families in those places are from lower socioeconomic strata.

Other exogenous factors like race, ethnicity, or religion, so often used in research in the United States, are not included here because of the homogeneity of the Greek population.

Table 1 shows that family socioeconomic status has a statistically significant positive effect on student GPA, indicating that educational achievement reflects inequalities in family background status. The significant positive effect for sex indicates that being female is associated with higher GPAs.

Given Bourdieu's basic ideas, the absence of a relationship between father's class (measured as his position within the social relations of production) and school success is notable. The academic achievement of children from differ-

ent class backgrounds is not significantly different from each other, once family socioeconomic status is controlled. This finding means that class position is not reflected in grades; and to the extent that high school success affects later educational and class attainments, it also implies that class position is not reproduced through education. These results are similar to those found by Robinson and Garnier (1985) in their study of France, even though the two studies examine two different points in the process of social reproduction.

The Background Effect

For cultural capital to be a mechanism of educational reproduction, not only must some aspects of family background affect academic success, but those family background factors must also influence cultural capital.

Do inequalities in family background characteristics affect cultural capital? To examine this relationship, we regress cultural capital on all of the exogenous variables. We also regress the other two intervening variables, effort and ability, on the exogenous variables to assess the effects of background on these direct determinants of student GPA (Table 2). Family socioeconomic status and having a bourgeois, or capitalist, father have a statistically significant, positive effect on the cultural capital of students. Thus the second empirical condition for the cultural capital process is satisfied.

Somewhat surprising is the lack of a residence effect, for the opportunities to engage in high culture are limited outside the metropolitan areas. It seems that if parents want their chil-

Table 2. Regression Coefficients of the Exogenous Determinants of Student Cultural Capital, Previous Achievement and Effort

Exogenous Variable	Cultural Capital	Previous Achievement	Effort
Residence	-.105	-.081	.182
Sex	.113	.514**	1.218**
Family SES	.182**	.559**	.265*
Bourgeois	.645**	.342	-.290
Manager	.236	.116	.221
Petty bourgeois	.222	.243	-.057
(Constant)	.064	17.500	4.429
R ²	.12	.15	.09

* $p < .05$ ** $p < .01$

dren to acquire high culture, geographical limitations are not an obstacle.

The significant effect of bourgeois class background on cultural capital combined with its lack of effect on GPA means that cultural capital does not reproduce class position through schooling, even though class position is a determinant of cultural capital.

Table 2 also shows that previous achievement and effort are influenced by family socioeconomic status and sex, but not by father's class. Thus, all three intervening variables could serve as mediators of family background influences.

In Greece, differences in academic success reflect the inequalities associated with socioeconomic status, not parental class position. Since family socioeconomic status affects cultural capital, cultural capital would be a mechanism in the educational reproduction process if cultural capital, in turn, is a direct determinant of academic success.

The Cultural Capital Effect

Does cultural capital affect academic achievement? To examine this effect we regress academic achievement (GPA) on cultural capital and two other intervening variables, student effort and previous achievement; and the exogenous variables described above.⁹ Sociologists have only recently included student effort in models of educational achievement (Natriello and McDill 1986), though its importance as a direct determinant has been often emphasized by learning theorists (Caroll 1963; Bloom 1974; Harnischfeger and Wiley 1980).

Table 3 presents four different regression equations, with the dependent variable in each being the eleventh grade GPA. The first equation includes all direct determinants of GPA, while the others exclude either previous achievement, student effort or both. These equations allow us to assess the direct effects of cultural capital, its indirect effects through either previous achievement or effort, and its total effect on student GPA (See Alwin and Hauser 1975). The coefficients in column 1

Table 3. Regression Coefficients of the Determinants of Student GPA

Variable	(1) All Variables	(2) Without Previous Ach.	(3) Without Effort	(4) Without Effort or Ach.
Residence	.239	.120	.295	.205
Sex	-.099	.181	.034	.553*
Family SES	.194*	.654**	.193*	.717**
Bourgeois	.021	.175	-.085	-.047
Manager	.163	.196	.198	.206
Petty bourgeois	.044	.139	.001	.047
Cultural capital	-.139	-.036	-.098	.074
Previous ach.	.984**	—	1.041**	—
Effort	.152**	.321**	—	—
(Constant)	-3.254	13.341	-3.629	14.744
R ²	.633	.243	.607	.138

* $p < .05$ ** $p < .01$

show that cultural capital has no direct effect on student GPA; while both previous achievement and effort, the other intervening variables, have statistically significant direct effects. One point of previous achievement increases student GPA by almost an entire point ($b = .98$), while one additional hour of homework increases GPA by .15 of a point. These are important effects in Greece, where one-tenth of a point can be the difference between going to a superior or inferior university, or between obtaining a college education or not.

While the cultural capital measure used here reflects activities that occurred after the measure of previous achievement, it could be argued that the distribution of cultural capital among students remains stable over the years, so that the previous achievement measure may reflect previously acquired cultural capital experiences. If so, some of the effect of cultural capital on student GPA should be indirect through previous achievement. Results in column 2 do not support that argument, for excluding previous achievement from the equation does not produce a significant effect for cultural capital. The results in column 3 also argue against a hypothesis that the effect of cultural capital on student GPA is indirect through effort. Finally, column 4 shows that the total effect of cultural capital on student GPA is not statistically significant, suggesting the lack of an indirect effect through some omitted variable(s). For the entire sample,

⁹ The results with respect to cultural capital were the same whether the exogenous variables were included in the equation or not. However, by including the exogenous variables we obtain more conservative estimates of the direct effects of previous achievement and effort, which enhances the plausibility of our argument about the role of these two variables.

Table 4. Regression Coefficients of the Direct Determinants of Student GPA by Sex and Residential Category

Variable	Females	Males	Towns or Villages	Prefectural Capitals	Metro Areas
Residence	.221	.276	.176	.308	.434
Sex			-.262	.055	.088
Family SES	.244*	.163	.208	-.119	.146
Bourgeois	-.217	.372	.275	-.902*	-.119
Manager	.128	.295	-.038	-.321	.678
Petty bourgeois	-.221	.460	.187	-.856	.290
Cultural capital	-.153	-.156	-.250	-.270	-.000
Previous achievement	.991**	.971**	1.053**	1.300**	.849**
Effort	.138**	.164**	.234**	-.092	.117*
(Constant)	-3.170	-3.492	-4.727	-6.711	-1.882
R ²	.681	.585	.596	.764	.659

* $p < .05$ ** $p < .01$

then, cultural capital has no significant effect on student GPA, either direct or indirect through either of the other direct determinants of GPA.

We also examined whether the effect of cultural capital depended on the level of some of the exogenous variables, since such interactions were either found significant or suggested by previous research on reproduction (DiMaggio 1982; Robinson and Garnier 1985). To detect possible interactions with sex or residence, regressions were run for each sex and residence category. Results in table 4 show that for both sexes, effort and previous achievement have significant effects on GPA, while cultural capital has no effects. Previous achievement has a significant effect on GPA for all residence categories, while effort has a significant effect in all categories but prefectural capitals. The lack of effect in that category may be the result of the relatively small number of sampled students in that stratum (17 percent of the sample) rather than of the existence of a different achievement process. But again, the most important finding is the lack of any effect of cultural capital within any residence category.¹⁰

Although cultural capital had no effect on overall GPA, it might affect particular academic

subjects. Table 5 presents estimates using grades in four subjects: language, mathematics, science, and history. The equations are presented excluding effort and previous achievement, since if cultural capital has an effect when one or both of these determinants are controlled, it will also have an effect when none of them is controlled. The results are similar to those for overall GPA; cultural capital has no significant effect on course grades in any subject.

The Transformation Relationship

Our analysis has shown that cultural capital does not influence academic rewards in Greece and thus is not a mechanism that transforms family socioeconomic status into educational achievement. These findings are different from the United States, where DiMaggio (1982) found significant effects of cultural capital on student grades, net of measured ability and father's education. It is difficult to explain this difference since the two studies differ in a variety of ways.¹¹ Using the underlying logic of cultural capital theory, one might attribute the difference

¹⁰ Our findings of no interaction between sex and cultural capital in the determination of student GPA do not contradict Robinson and Garnier's (1985) French findings. Their study found significant interactions between sex and cultural capital in the determination of class attainment, although they did not measure cultural capital directly. The lack of any interactions between sex and cultural capital in deter-

mining student GPA in Greece does not mean that there are no interactions between sex and educational attainment in the determination of class position. We also analyzed the interaction between family socioeconomic status and cultural capital and found no significant effect on student GPA (table available from the authors).

¹¹ One possible reason for the differences may be that DiMaggio had no measure of effort in his analysis, and he used a different measure of ability. But we

Table 5. Regression Coefficients of the Determinants of Language, Mathematics, Science and History Grades

Variable	Language	Mathematics	Science	History
Residence	.272	.447	.672	-.219
Sex	.982**	.494	-.144	.535*
Family SES	.755**	.780**	.704**	.518**
Bourgeois	.003	.974	.535	.113
Manager	-.028	1.050	1.077*	.366
Petty bourgeois	-.140	.404	.570	-.124
Cultural capital	-.046	-.167	-.089	.144
(Constant)	14.036	12.244	11.630	17.837
R ²	.122	.093	.101	.084

* $p < .05$ ** $p < .01$

to the need for a less-refined mechanism of educational selection in Greece, if Greece is not a meritocratic system. But our data do not support this notion, since previous achievement and student effort together explain 59 percent of the variance in GPA, suggesting a highly meritocratic system.

If cultural capital were ever a mechanism for educational reproduction in Greece, it does not operate now. As in the United States, the pressures for meritocratic selection and equality of educational opportunity have increased significantly since the early 1960's and so has the need for further refinement of the means of reproduction and legitimation. This process may have accelerated in Greece after the fall of the military dictatorship in 1974. The 1981 election of the Socialist Party may be a further indication of the increased long-term demand for equality of opportunity and meritocracy, since that was one of the major campaign planks of the party.

The significant total effect of family socioeconomic status on GPA indicates that Greek schools do reproduce status inequalities. But since cultural capital is apparently not a mechanism in this process, how is background inequality transformed into academic rewards?

Table 6 summarizes the total, direct, and indirect effects of the exogenous variables on student GPA. Using the information in Tables 1 to 4, effects that are not statistically significant are treated as 0 and omitted from the table, and the indirect effects are calculated by sub-

have seen that cultural capital has no effect in our analysis even when effort and/or ability were not included in the equations.

Table 6. Total, Direct and Indirect Effects of the Exogenous Variables on Student GPA

Exogenous Variable	Total Effect	Direct Effect	Indirect Effect
Sex	.607	—	.607
Family SES	.719	.194	.525

tracting the direct effect from the total effect of a variable.

The only exogenous variables in Table 1 that affected student GPA were sex and family socioeconomic status. Of the possible intervening variables presented in Tables 3 and 4, cultural capital never had a significant effect on student GPA, while previous achievement and effort were almost always significant. Thus, all the indirect effects of sex and family socioeconomic status are mediated through previous achievement and effort. The unmediated effects of these two background variables either disappear or are considerably reduced when ability and effort are controlled. Specifically, there is no longer any unmediated effect of sex once the direct determinants of GPA are included in the model. And while the unmediated effect of family socioeconomic status remains significant, its magnitude is considerably reduced (from $b = .719$ to $b = .194$). These direct effects of family socioeconomic status on student GPA are difficult to explain. They may always be indirect through some other omitted intervening variable, or they may reflect some tendency of teachers to consider family background characteristics when they reward students.¹²

CONCLUSION

The major mechanisms through which family socioeconomic status is transformed into educational achievement are ability and effort. *The reproduction that occurs does so mainly through the differential ability and effort of students from different socioeconomic backgrounds.*

¹² Other research (Katsillis 1987) suggests that this small unmediated effect of family socioeconomic status on GPA is likely due to its relationship to tutorial schooling. In Greece, almost everyone intending to go to college enrolls in some form of private tutorial school for one or more semesters. These schools are generally considered effective in raising levels of academic achievement. Since families must pay for these schools, it is likely that family socioeconomic status has some effect on the quantity

The effects of ability and effort must be carefully considered, since their presence is usually interpreted as an absence of reproduction. Educational research on the process of social selection has tended to become theoretically divided into "achievement" and "ascription" models. Theories which see schooling as an achievement process (the result of ability and effort) have assumed that this process cannot also be a mechanism of reproduction, while theories which see schooling as a mechanism for social reproduction have assumed that reproduction cannot also be a process of achievement. But an empirical finding of schooling as an achievement process is not necessarily incompatible with a *theoretical* argument of schooling as a process of reproduction. The theoretical controversy has framed the empirical issues too narrowly. In particular, theories of educational reproduction may be sacrificing important insights by assuming there are no theoretically meaningful effects of the achievement process in schooling, for reproduction and achievement are not mutually exclusive processes.

Educational systems not only promote social reproduction and achievement, but social reproduction through achievement, to the extent that the latter is determined by the social background of the student. That this educational selection process also provides for some mobility is understood. But what is often not recognized is the extent to which the achievement process itself has become the mechanism of reproduction.

This analysis of reproduction through achievement has focused on academic success, but the process plays a role in other outcomes, whether it be educational, occupational, status or income attainment; if it depends on family background, and if it is "individual ability and effort" that transform background inequalities into differential attainment, then achievement is a mechanism of reproduction. Indeed, if the achievement process functions as a reproductive mechanism in attainment, its cumulative effect in the process of social reproduction may be substantially larger than appears from a study of academic success. Further study of its role in later educational and socioeconomic attainment is necessary before the extent to which it serves

social mobility and social reproduction can be fully assessed.

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GENERATION, ETHNICITY, AND OCCUPATIONAL OPPORTUNITY IN LATE 19th CENTURY AMERICA*

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This paper investigates the influence of generation and country of origin on occupational mobility between 1880 and 1900 among a sample of U.S. white men. Father-to-son mobility is examined for males 5 to 14 years old in 1880, and career mobility is analyzed for men aged 25 to 34 in the same year. While generation and national-origin groups clearly differed in their occupational distributions at each date, we find minimal evidence of differences in overall opportunities or in the relationship between occupational origins and destinations. Thus, on the whole, generation and country of origin appear to have had little influence on the mobility process in the late 1800s. There is some evidence that the men in our sample, who were overwhelmingly of Northern and Western European heritage, gained occupationally from the incipient flow of migrants from Southern and Eastern Europe.

The relationship between immigration and social mobility is an enduring issue in the United States. As a nation of immigrants, Americans generally believe that their society has provided unparalleled opportunity for the poor and downtrodden of the world. The society is viewed as a great melting pot that absorbs, if not necessarily homogenizes, each new wave of immigrants.

We examine the implications of immigration for occupational mobility in the late 1800s using linked data from a national sample of white men. We are concerned with the degree to which generation and, to a lesser extent, ethnic affiliation facilitated or retarded social mobility between 1880 and 1900. As far as we know, this is the first study of generational differences in mobility in the 19th century based on a national sample. In addition, we briefly consider the effect of ethnic context on occupational opportunity, i.e., whether established ethnic groups, primarily those from Northern and Western Europe, made particularly great gains in status in areas that received large numbers of "new" immigrants.

While an understanding of the historical relationship between generation, ethnic origin, and

occupational opportunity is valuable in its own right, we believe that this research has additional relevance. Various studies (Blau and Duncan 1967) find that some American ethnic groups, such as blacks and perhaps Hispanics, encounter serious obstacles to occupational advancement, even beyond those due to a lack of "credentials" (e.g., adequate education). The extent to which this is a chronic problem for various ethnic groups throughout American history is an important issue that can be addressed with our data.

IMMIGRATION PATTERNS

Immigration to the United States was particularly important during the late 19th and early 20th centuries, both because of its volume and because the national origins of the immigrant stream were undergoing a marked transition. The sheer number of foreign-born residents attests to their impact on national life. In 1870, the U.S. census enumerated 5.6 million foreign-born residents. In 1900, the figure had risen to 10.3 million, and by 1910, there were 13.5 million immigrants residing in the nation (Hutchinson 1956):

Ethnicity was particularly salient at the end of the 19th century because of the changing pattern of immigration. Throughout most of the century, immigrants came almost exclusively from Northwestern Europe and Germany. Toward the century's end, however, immigration from Southern and Eastern Europe increased, bring-

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ing such groups as Italians, Russians, Poles, and Czechs. The foreign born began to fall into two distinct groupings based on the timing of the flow from their origin areas. The "old" immigrants came from countries with a long history of immigration to the United States; "new" immigrants had relatively little experience in the country, both individually and collectively (Lieberson 1980).

A large and growing population of second-generation residents of the nation emerged. By 1880, these native-born children of immigrant parents outnumbered the foreign born. In 1900, the first and second generation accounted for 15.3 and 23.4 percent respectively of the U.S. population (Hutchinson 1956).

Several studies (Griffen and Griffen 1978; Hershberg, Katz, Blumin, Glasco, Griffen 1974; Kessner 1977) document important differences in the occupational positions of first-, second-, and later-generation residents of 19th century U.S. cities. Immigrants were overrepresented at the bottom of the occupational hierarchy and in specific occupational niches in the white-collar world (e.g., petty proprietors). Their children were more favorably placed, although they remained disadvantaged relative to the native born of native parentage. Many of these differences are documented in the extensive 41-volume report of the U.S. Immigration Commission (1911).

Scholars examining historic patterns of ethnic stratification in the U.S. have also found striking differences in the occupational and industrial positions of specific immigrant groups in cities (Bodnar 1985; Glasco 1977; Griffen and Griffen 1978; Kessner 1977; Model 1988; Zunz 1982). For example, Irish were frequently unskilled laborers; Germans dominated in trades such as butchering, tailoring, and shoemaking; and Eastern European Jews were overrepresented in the garment industry or as petty entrepreneurs (Glasco 1977; Griffen and Griffen 1978; Kessler-Harris and Yans-McLaughlin 1978; Kessner 1977). In general, groups from Northern and Western Europe (except perhaps the Irish) were better off, while groups from Southern and Eastern Europe were clustered at the bottom of the occupational structure.¹

¹ Few national tabulations of occupation by generation and ethnicity are available for this time period. In a related analysis, we studied special tabulations of the 1900 U.S. Census that were prepared for the U.S. Immigration Commission. These tabulations provide 40 major occupations, broken down by

MOBILITY BY GENERATION

While some groups clearly occupied a lower position in the occupational hierarchy than others, they were not necessarily disadvantaged with respect to mobility. Groups with very different initial positions may have moved up or down at similar rates. Similar mobility patterns would suggest that generation or ethnic affiliation was not an impediment to social advancement, even though some groups entered at the bottom of the occupational hierarchy.

Barriers of language, culture, and skills undoubtedly hindered the occupational achievement of immigrants at the time of arrival; however, expectations regarding their mobility over time are more equivocal. Several arguments support the view that immigrants and their children were advantaged with respect to occupational mobility. First, if the initial position of immigrants was depressed because of cultural and linguistic barriers that were easily overcome, considerable upward mobility in a relatively short period of time might result. Such mobility might be greater than that of the native whites of native parentage (NWNP), given the low initial status of the foreigners. Second, if immigrants were a select group with respect to motivation and ability, this might also promote high occupational mobility. Moreover, the effect of migration selectivity might extend beyond the first generation if immigrants passed high levels of motivation on to their children. Finally, experience in diverse social and cul-

first vs. second generation for each of 15 European ethnic groups. Analyzing these data with the Alsclat cluster program, we found that the occupational distributions of the 30 groups (15 nationalities by 2 generations) clustered along two major dimensions: first, by geographic area of origin, with a major contrast between Southern and Eastern Europeans and Northern and Western Europeans; second, by generation, with the first generation distinct from the second. These results are available upon request.

Several differences between the first and second generations were fairly common across ethnic groups. In most instances, the percent employed in domestic and personal services declined substantially from the first to the second generation. A similar decline was observed in manufacturing and mechanical pursuits. In contrast, employment in trade and transportation occupations was generally more prevalent among the second generation than the first, except for huckster/peddler and merchant/dealer positions, which were common among first-generation immigrants from Central and Eastern Europe.

tural environments may foster occupational achievement (Blau and Duncan 1967). This may be especially true for the second generation, the native whites of foreign parentage (NWFP), who experienced a culturally distinct home background yet reaped the benefits of early exposure to American society and institutions.

While high rates of mobility would result if immigrants were readily assimilated into society, the time required for assimilation is unclear. Considerable time may elapse before a new language is learned or a set of skills is acquired. Assimilation may also be hindered by residence in ethnic enclaves that serve as buffers between the newcomers and the larger society. Barriers may also be imposed by the receiving society. Thus, both a lack of the requisite skills or discrimination by the native born of native parentage may have impeded the mobility chances of immigrants.

In addition, some immigrants expected to return to their countries of origin after a brief period of working and saving in the United States (Kessner 1977; Morawska 1985). These immigrants had little incentive to invest in the skills necessary for occupational advancement. Because their aim was short term accumulation of cash, they were frequently employed in readily available positions as unskilled laborers.

Although ethnic and generational differences in occupational position in the late 1800s and early 1900s are well-documented, virtually no research on historic patterns of occupational mobility in the U.S. appeared until the late 1960s. Recent studies have focused, with a few exceptions (Jackson 1974), on eastern or mid-western cities. The urban slant of these studies is notable since about half of the U.S. population lived in places with fewer than 2500 residents in 1900. Data from the U.S. Immigration Commission (1911) show that native whites of native parentage were especially concentrated in farming, a fact that could have important implications for understanding differential rates of occupational mobility.

In a pioneering historical study of occupational mobility, Thernstrom (1969, 1973) examined career mobility in the late 19th and early 20th centuries with a linked data set derived from Boston's city directories and tax records. His analysis focused on the first and last jobs of Boston men from the birth cohorts of 1850-59, 1860-79, 1880-89, and 1900-09. Unfortunately, most of the analysis used a simple classification

of jobs into manual and non-manual categories. Nonetheless, clear differences were evident in both the occupational positions and mobility patterns of the foreign born, the second generation, and the native born of native parentage.

Thernstrom's study showed that the foreign born and their native-born children occupied a disadvantaged position in the occupational hierarchy. Men in both groups were far more likely to occupy blue-collar positions at the beginning and end of their careers than were the native born men of native parentage. In fact, Boston's foreign-born men were in a less favorable position relative to the native born of native parentage at the end of their careers than they were at the beginning. Second-generation men tended to gain ground over the course of a career, although they were not as successful as the native born of native parentage. Their careers were characterized by a great deal of upward (and downward) mobility across the manual/non-manual line. As noted by Thernstrom (1969), "But unlike men actually born abroad, second-generation immigrants who began as manual laborers had relatively good prospects for subsequent upward mobility into clerical, sales, and petty proprietor positions; they were not left further and further behind the WASP [White Anglo Saxon Protestant] with each passing year" (p. 141).

One potential explanation of the disadvantage experienced by immigrants and their children centers on the unfavorable occupational origins of these men. Thernstrom considered this possibility, but found that the patterns persisted when controls were introduced for father's occupation, broadly classified.

Thernstrom's findings for the late 19th and early 20th centuries differ from his findings for men who came of age in the middle of the 20th century. The influence of generation apparently decreased, especially for the second generation (Thernstrom 1973, p. 126). In this respect, Thernstrom's conclusions are similar to those reported in national studies of the post-World War II period (Blau and Duncan 1967; Featherman and Hauser 1978). These studies find small differences in occupational mobility by generation when other background variables are controlled. If anything, the second generation is characterized by over-achievement (Blau and Duncan 1967, pp. 240-1).

Studies of generational differences in mobility in the late 19th century in places smaller than Boston reach different conclusions than Thern-

strom. Observing occupational mobility between 1850 and 1860 in Indianapolis, Hardy (1978) concludes, "The nativity-ethnicity analysis indicates that, in terms of observed mobility, immigrants, in general, were not disadvantaged in the occupational market...." (p. 219). In their study of Poughkeepsie, N.Y., Griffen and Griffen (1978) find that generation is not a very consistent predictor of crude levels of occupational mobility between 1850 and 1880. Rather, they emphasize the importance of membership in specific ethnic groups, and the tendency of generations and ethnic groups to specialize in specific occupations as a means of upward mobility. Many of the Poughkeepsie results are replicated in Esslinger's (1975) study of South Bend, IN in the late 1800s, although he finds unusual success among the second generation.

Studies of occupational mobility in the late 19th and early 20th centuries find differentials by specific ethnic group. Thernstrom (1973) finds low rates of upward mobility among Catholics, particularly the Irish, relative to native Yankee Protestants. Somewhat reluctantly, he attributes the mobility difficulties of the Irish to group cultural values, suggesting that the Irish, due to their peasant agricultural origins, lacked the attitudes toward work, education, thrift, and consumption that would drive them to try to excel occupationally.

Griffen and Griffen (1978) also find that Irish immigrants experienced difficulties in achieving occupational mobility in Poughkeepsie, although the disadvantage was not as pronounced among second-generation Irish. German-origin workers, regardless of religion, were unusually successful. Hardy (1978), while downplaying the general importance of generation in understanding mobility, also emphasizes the unusual occupational success of German immigrants in Indianapolis. Esslinger (1975) also finds that the Irish and Germans experienced clear differentials in mobility, although he minimizes the difficulties of the Irish.

While these studies provide important historical evidence about U.S. occupational opportunity, most are based on rather crude statistical methods that only permit comparisons of overall (gross) amounts of upward and downward mobility. Recent developments in contingency table analysis (Clogg 1982; Duncan 1979; Goodman 1979; Sobel, Hout, Duncan 1985) permit a much more precise description of the mobility process that gives a better understanding of differences in the mobility patterns of

immigrants, their children, and the native born of native parentage.

DATA AND METHODS

Our data come from the National Panel Study (NPS), a sample of 4,041 white males whose 1880 and 1900 census records were linked. To develop the data set, a representative national sample of white males aged 5 to 14 and 25 to 34 was drawn from the 1880 U.S. census manuscripts. An attempt was then made to locate these men in the 1900 census manuscripts. We were able to link 39.4 percent of the 10,252 males in the original 1880 sample to their 1900 census records.² While this rate is hardly ideal by contemporary standards of survey research, it is comparable to other historical studies that have linked individuals over a decade or longer (Parkerson 1982). A description of the procedures for drawing and linking the sample is provided by Guest (1987).

A major problem in previous community studies of 19th century occupational mobility has been the inability to study individuals who moved out of the community between the initial and terminal points of the study. In this study, we searched for all individuals in the original sample throughout their 1880 state of residence. Given the limited resources of the project, it was not possible to launch a national search for all individuals. Half of the individuals not found in their 1880 home state in 1900 were searched in those states that together received at least 90 percent of the outmigrants from the origin state. Unfortunately, this search was disappointing, as only 169 of the final 4,041 matched cases were found out of state. In analysis not shown, we have found that internal migration had little effect on differences in social mobility, except for farmers. Geographically immobile men of farm origin tended to persist in that occupation.

Mobility tables have been constructed from information on occupation (or father's occupation) as reported in the 1880 and 1900 censuses. Occupations were coded into standard 1950 census categories. The mobility analysis is based on a four-category cross-classification of occupation in 1900 by occupation (or father's occu-

² The rates of linkage were similar for the two cohorts. Of the 5,191 men in the younger cohort in 1880, we were able to match 39.2 percent. The linkage rate for the 5,061 men in the older cohort in 1880 was 39.6 percent. Ns in the tables and text may vary slightly due to missing data on some variables.

pation) in 1880.³ White-collar occupations include professional, managerial (including proprietor), clerical, and sales positions. Upper blue-collar occupations comprise foremen and skilled craft positions. Lower blue-collar jobs include operatives, service workers, and unskilled laborers. Finally, farm owners, tenant farmers, and farm laborers are combined into a farm category. The size of the sample did not permit any greater detail. A more detailed analysis of general patterns of father-to-son mobility for seven occupational categories is provided elsewhere (Guest, Landale, McCann 1989).

An important question in the historical literature on social stratification is whether standard occupational categories have any meaning at earlier points in time. We are persuaded by Hauser (1982) that the social standing of most occupations has probably been relatively fixed since the late 1800s.

Selectivity in linkage is, inevitably, a major concern in studies using linked samples. Fortunately, it is possible to compare the occupational characteristics of our linked men in 1880 and 1900 with the characteristics of all men in the original 1880 sample (matched and unmatched combined) and appropriately aged men in the 1900 Public Use Sample (PUS). Previous analysis (Guest 1987) has shown that farmers and sons of farmers were overrepresented among the matches while unskilled laborers and sons of unskilled laborers were underrepresented. This pattern was true regardless of cohort or generation. Farmers should be easy to match, given their ties to property. Unskilled laborers are harder to match for a variety of reasons, including their unstable work histories.

Some feel for the difference between the matched and total samples may be gained by comparing the origin distributions of two groups of native whites of native parentage: matched cases from the younger cohort and all younger cohort cases (matched and unmatched) originally sampled from the 1880 census. Of the 1,279 matched NWNPs, the percentage distribu-

tion was: white-collar, 10.1; upper blue-collar, 10.9; lower blue-collar, 17.8; farm, 61.4. Of the 3,037 NWNPs in the total sample, the percentage distribution was: white-collar, 10.5; upper blue-collar, 10.7; lower blue-collar, 19.3; farm, 59.5. Of course, we cannot be certain that social mobility patterns were the same among the matched and unmatched cases. Nonetheless, inspection of the various generation groups suggests that changes in the crude occupational distributions were roughly the same for the matched cases as in comparisons of the original 1880 sample to men of the same birth cohort in the 1900 PUS.

Few in the younger cohort were foreign born, primarily because they were children when enumerated in the 1880 census. As a result, the first and second generations were combined in this cohort. We believe these two groups are similar in that they spent a large share of their childhoods in the United States in immigrant families. Three generations are distinguished in the older cohort, which has a sizable representation of the foreign born.

TOTAL MOBILITY

The outflow percentages for mobility from 1880 occupation to 1900 occupation are presented in Table 1. For the younger cohort, occupation in 1880 refers to father's occupation (or in some cases, the occupation of the household head),⁴ while occupation in 1900 refers to the young man's primary activity in early adulthood. For the older cohort, occupation refers to the respondent as he moves from young adulthood (1880) to middle age (1900). The numbers provided in the body of each panel summarize the occupational destinations of the men from each origin category.

Looking first at the origins of the men by generation in the U.S., provided in the last column, the major generational difference is clearly related to participation in farming; the NWNPs group was disproportionately concentrated in farm occupations compared to the men with foreign origins.

Generational variation in the percentages in the three nonfarm occupations is difficult to interpret due to the dominance of farmers in the NWNPs group. Therefore, we recalculated the

³ A four-category scheme (white-collar, upper and lower blue-collar, and farm) was considered preferable to a three-category scheme for several reasons. First, we wanted to retain as much detail as possible, given our sample size. Second, we wanted to retain two manual groups since previous research has found that movement from the bottom of the occupational hierarchy into skilled or semi-skilled jobs represents a very real improvement in the occupational position of immigrant men.

⁴ Fathers' occupations were drawn from the 1880 household data associated with the boys' census records.

Table 1. Outflow Percentages for Mobility from 1880 Occupation to 1900 Occupation by Generation: U.S. White Males Aged 5-14 and 25-34 and 25-34 in 1880

Occupation, 1880 ^a	Occupation, 1900				Total	N	Percent Distribution
	White Collar	Upper Blue-Collar	Lower Blue-Collar	Farm			
Younger Cohort							
<i>Native Whites/Native Parents (NWNP)</i>							
White-collar	59.7	14.5	13.7	12.1	100.0	124	10.4
Upper blue-collar	26.2	36.5	17.5	19.8	100.0	126	10.6
Lower blue-collar	22.6	13.5	36.5	27.4	100.0	208	17.4
Farm	14.3	8.6	17.3	59.9	100.1	736	61.6
Percent distribution	21.7	13.0	20.3	45.1	100.0		100.0
N	259	155	242	538		1194	
<i>Foreign Parents^b</i>							
White-collar	55.2	19.4	20.9	4.5	100.0	67	11.5
Upper blue-collar	26.9	26.9	33.7	12.5	100.0	104	17.8
Lower blue-collar	24.6	24.6	40.2	10.6	100.0	199	34.1
Farm	11.7	10.8	16.0	61.5	100.0	213	36.5
Percent distribution	23.8	19.3	28.0	28.8	100.0		99.9
N	139	113	163	168		583	
Older Cohort							
<i>Native Whites/Native Parents (NWNP)</i>							
White-collar	76.7	5.3	9.3	8.7	100.0	150	13.8
Upper blue-collar	14.6	58.5	13.0	13.8	99.9	123	11.3
Lower blue-collar	15.2	11.4	46.2	27.1	99.9	210	19.3
Farm	8.6	4.6	12.7	74.0	99.9	604	55.6
Percent distribution	20.0	12.1	18.8	49.1	100.0		100.0
N	217	132	204	534		1087	
<i>Native Whites/Foreign Parents (NWFP)</i>							
White-collar	88.1	7.1	2.4	2.4	100.0	42	19.4
Upper blue-collar	20.0	65.0	12.5	2.5	100.0	40	18.4
Lower blue-collar	15.4	15.4	60.0	9.2	100.0	65	30.0
Farm	10.0	5.7	18.6	65.7	100.0	70	32.3
Percent distribution	28.6	19.8	26.7	24.8	100.0		100.1
N	62	43	58	54		217	
<i>Foreign Born (FB)</i>							
White-collar	63.0	7.4	22.2	7.4	100.0	54	15.1
Upper blue-collar	17.9	58.2	20.9	3.0	100.0	67	18.8
Lower blue-collar	20.7	13.8	52.6	12.9	100.0	116	32.5
Farm	6.7	2.5	12.5	78.3	100.0	120	33.6
Percent distribution	21.8	17.4	28.6	32.2	100.0		100.0
N	78	62	102	115		357	

^a For the younger cohort, occupation in 1880 refers to father's occupation.

^b Includes Native Whites/Foreign Parents (NWFP) and a few Foreign Born (FB).

percentages using a restricted sample of men with nonfarm origins (not shown). Not surprisingly, the third generation is most concentrated in white-collar and least concentrated in unskilled jobs, while the situation is reversed for men with foreign origins. Variation in the percentage in upper blue-collar work is small. While this pattern is consistent with expectations, each generation is well-represented in all three non-

farm categories.

Since the census did not ask information on school attainment, we cannot determine the degree to which education is responsible for occupational differentials across generations. Illiteracy is heavily concentrated among the foreign-born, and it is likely that some of their relatively low concentration in white-collar work reflects a lack of educational credentials.

Table 2. Percentage Distribution By Type of Mobility, Generation, and Cohort: U.S. Males, 1880-1900

Type of Mobility	Native Whites/ Native Parents		Foreign Parents			
	Total Sample	Nonfarm Only	Total Sample	Nonfarm Only		
<i>Younger Cohort</i>						
Upward	33.8	29.9	35.7	37.8		
Stable	53.4	54.3	47.3	43.5		
Downward	12.9	15.8	17.0	18.6		
Total	100.1	100.0	100.0	99.9		
N	1194	361	583	333		
	Native Whites/ Native Parents		Native Whites/ Foreign Parents		Foreign Born	
	Total Sample	Nonfarm Only	Total Sample	Nonfarm Only	Total Sample	Nonfarm Only
<i>Older Cohort</i>						
Upward	21.3	18.7	24.0	20.1	21.8	24.1
Stable	67.2	71.7	68.2	73.4	63.9	62.0
Downward	11.5	9.6	7.8	6.5	14.3	13.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	1087	396	217	139	357	216

Turning to the amount of occupational mobility experienced by each group, the same general changes are evident, regardless of generation and cohort. Workers moved out of the farm category, and strong gains were made in white-collar work. Thus, any differentials occur within a context of general upward mobility. Table 2 presents the percentages upwardly mobile, stable, and downwardly mobile by generation and cohort. Because comparisons across generations are strongly influenced by differential participation in farming, percentages are shown including and excluding farm origins and destinations.

In the younger cohort, the total amount of occupational movement was somewhat higher among the men with foreign parents, but the differences are not large. About 52.7 percent of the men with foreign parents were employed in a different occupational category in 1900 from their fathers in 1880, compared to 46.7 percent of the native-born men with native parents. Ranking the occupations by status, with farm at the bottom, it is apparent that the greater mobility of men with foreign parents is a product of greater upward and downward movement. The same general patterns obtain among men with nonfarm origins and destinations.

Turning to the older cohort, little difference between the generations in total mobility is found in the full sample — around one-third of each generation is in a different occupational in 1900 than in 1880. The major generational difference appears for downward mobility, with the foreign born being the most common skidders and the second generation the least. Generational differences increase, although the pattern remains largely the same, when men with farm origins and destinations are excluded. Yet the differences in either case are not great.

MODELS OF FATHER TO SON MOBILITY

The mobility rates discussed above do not have unambiguous interpretations. For example, high rates of upward social mobility may reflect the growth of high-status occupations rather than a high rate of movement between occupations, independent of structural growth. The mobility process can be described more precisely and parsimoniously with the log linear models developed in recent years (Clogg 1982; Duncan 1979; Goodman 1979; Sobel et al. 1985).

Our initial approach to modeling generational differences in the mobility process is heavily

influenced by the work of Sobel et al. (1985), who argue that structural and exchange mobility can be separated in tables characterized by quasi-symmetry. Under conditions of quasi-symmetry, the cell frequencies in a mobility table may be expressed in terms of three types of parameters: the Beta coefficients, which represent the general tendency of individuals to be found in specific occupations at the origin time point; the Alpha coefficients, which represent the marginal shift between origins and destinations; and the Delta or exchange parameters, which measure the symmetric movement between occupational pairs.

The Beta and Alpha coefficients have sometimes been interpreted as indicators of the occupational distribution of the labor force, or changes in societal demand for certain skills. Such an interpretation is questionable in our analysis because the generations were living in essentially the same labor market. While it might be argued, of course, that groups were operating within ethnically- or generationally-segmented labor markets, we believe that marginal heterogeneity reflects a variety of factors, not all necessarily related to changes in the occupational structure.

The Sobel et al. methodology allows us to test some basic models of mobility differences between generations in the younger cohort. Since the data for each generation fit the model of quasi-symmetry (NWNP: $L^2 = .79$, d.f. = 3; FP: $L^2 = 1.10$, d.f. = 3), we focus on differences by generation in structural mobility (the marginal shift between origins and destinations) and the pattern of exchange.

A simple but implausible model constrains structural and exchange mobility to be equal in the two generations. This model allows the Beta (origin distribution) values to vary by generation but posits equal Alpha and Delta values. Not surprisingly, this model is not an adequate fit to the data ($L^2 = 40.99$, d.f. = 15). A second model allows both Alpha and Beta values to vary but posits equal exchange parameters for the two generations ($L^2 = 31.49$, d.f. = 12). This model provides a statistically significant improvement in fit over the former model, suggesting that structural mobility also varies by generation. Finally, we test for generational differences in exchange. The resulting L^2 (1.89, d.f. = 6) is quite small and clearly indicates an adequate fit. Apparently, different patterns of exchange (Delta) are also present in the two generations.

Before modeling the mobility process in a more parsimonious fashion, we briefly determine how the Alpha, or marginal heterogeneity, parameters differ. The Alpha parameters may vary from 0 to infinity, with a value of 1.0 indicating no marginal change. Since the product of the Alpha coefficients is one, they indicate proportional shifts in the origin distribution. The Alpha values from the model of quasi-symmetry for each generation are: NWNP: white-collar, 2.46; upper blue-collar, 1.13; lower blue-collar, .89; farm, .40; FP: white-collar 2.64; upper blue-collar, 1.04; lower blue-collar, .76; farm, .48. Clearly, the differences across occupation are large; the white-collar group in particular increased, while the farm category declined sharply. Though statistically significant, the differences between the generations are small. The foreign-origin men were slightly more likely to move into white-collar work and to retain farm occupations.

We now turn to modeling the association between origin and destination occupations, and to examining differences between the generations in the relationship between father's and son's occupation. We test the relative fit of various association models, including quasi-independence, uniform association, and row-column effect models.⁵ The model of quasi-independence posits no relationship between origins and destinations in the off-diagonal cells of the tables. Alternatively, any off-diagonal associations that are found may be uniform (UA) or characterized by row and column effects. Uniform association means the relationship between origins and destinations is the same across all adjacent occupational pairs (assuming that occupations can be ranked from high to low status); that is, the association can be adequately described by a single number. The UA parameter is analogous to a regression coefficient for the effect of origin on destination. The row-column effects model, on the other hand, assumes the relationship between origins and destinations varies by row and column. We also assess whether the association is the same (homogeneous) or different (heterogeneous) across the two generations.

These models are estimated separately for two patterns of occupational inheritance, or diagonal persistence, in the mobility table. The

⁵ Since quasi-symmetry fits the data for both generations, we only consider models that constrain row and column effects to be equal.

Table 3. Models of Association Between the Occupational Origins and Destinations of Generations, by Cohort: U.S. Males, 1880-1900

Off-Diagonal Model	Occupation-Specific Diagonal			Free Diagonal		
	L ²	d.f.	BIC	L ²	d.f.	BIC
<i>Younger Cohort</i>						
Quasi-Independence	38.21	14	-66.54	11.46	10	-63.37
Homogeneous Uniform Association	31.80	13	-64.80	4.20	9	-63.15
Heterogeneous Uniform Association	29.84	12	-58.95	2.35	8	-57.51
Homogeneous Equal Row/Column	30.77	11	-51.54	2.07	7	-50.31
Heterogeneous Equal Row/Column	9.11	8	-50.75	1.21	4	-28.72
Nearly Homogeneous Quasi-Independence	23.04	13	-74.23			
Nearly Homogeneous Uniform Association	16.46	12	-73.33			
<i>Older Cohort</i>						
Quasi-Independence	40.85	23	-129.69	15.68	15	-95.54
Homogeneous Uniform Association	34.86	22	-128.27	9.11	14	-94.70
Heterogeneous Uniform Association	26.87	20	-121.43	6.95	12	-82.04
Homogeneous Equal Row/Column	29.55	20	-118.75	3.25	12	-85.74
Heterogeneous Equal Row/Column	3.61	14	-100.20	.83	6	-43.67
Nearly Homogeneous Quasi-Independence	27.10	22	-136.04			
Nearly Homogeneous Uniform Association	20.49	21	-135.23			

occupation-specific models assume that diagonal persistence varies by occupation, but constrains parameters to be equal for the two generations. The free inheritance models posit that the inheritance parameters differ by both occupation and generation.

The top panel of Table 3 presents results, for the younger cohort, from models comparing the mobility pattern of NWNP men with that of men with foreign parents. Each of the models allows different Alpha and Beta parameters across the generations while varying the diagonal and off-diagonal effects. Both L² and BIC values (Raftery 1986) are presented for evaluating models, although the BIC is emphasized.⁶ The more negative the BIC value, the better the fit of the model.

To test for the best off-diagonal model, we first inspect the BIC values under each of the diagonal parameterizations. The model of Quasi-Independence is most acceptable, but the

Homogeneous UA model fits almost as well and provides a superior fit according to the likelihood-ratio chi-square test. The BIC scores for the two models are so similar that the BIC test is probably not adequate to discriminate between them. Both models suggest that the generations do not differ in their patterns of off-diagonal exchange.

On the whole, the hypothesis of similar occupational inheritance patterns across generations is also supported, as the BIC values are more negative for the occupation-specific version of each off-diagonal model. However, inheritance could differ across generations in specific occupational categories. Examining this possibility, we found that only one diagonal parameter, that for farmers, differed across generations, with inheritance of farming being much greater among foreign-origin men.

Two plausible models describe the pattern of intergenerational inheritance: the Nearly Homogeneous Quasi-Independence model and the Nearly Homogeneous UA model. The Nearly Homogeneous Quasi-Independence model posits that no off-diagonal exchange needs to be

⁶ See Raftery (1982) for a discussion of the relative merits of the likelihood-ratio test and BIC for model selection.

recognized in either generation and that there are no generational differences in occupation-specific inheritance, except for farmers. The Nearly Homogeneous UA model posits that the effect of origins on destinations (off the diagonal) is the same for both generations; in addition, all the diagonal parameters are the same, with the exception of those for farmers.⁷ These findings suggest that the persistence of foreign-origin men in farming had a depressing effect on upward social mobility. Apart from this, there was great similarity between the generations in patterns of occupational mobility.

The persistence of foreign-origin men in farming is consistent with previous research on farm communities in the North Central region of the United States (Barron 1985). This research documents unusual geographic stability and perseverance in farm occupations in rural immigrant communities during the late 19th century. Immigrants who established themselves on farms were apparently reluctant to abandon farming as an occupation. Most likely, immigrant farm communities were unusually isolated from contact with the larger society.

MODELS OF CAREER MOBILITY

We follow a similar analytic strategy to model the career mobility of the older cohort.⁸ The analysis is complicated slightly by the fact that the comparisons now involve three generational groups. However, the results are relatively straightforward since the differences between the three groups turn out to be minimal.

We first estimate the quasi-symmetry model, constraining the Alpha and Delta parameters to be equal for each generation. This model yields an L^2 of 35.66 with 27 degrees of freedom, providing an adequate fit to the data. This indicates that the older men, once launched in their careers, were essentially similar across the generations with respect to occupational growth

and exchange.⁹

The bottom panel of Table 3 presents the fit statistics for the various association models of career mobility. As with the younger cohort, the models that constrain occupational inheritance to be equal across the generations fit better than the free-diagonal models. Again, according to the BIC statistic, the preferred models are the Quasi-Independence and Homogeneous UA models. Each of these models posits that the off-diagonal association between origins and destinations does not differ by generation.

We also tested for generational differences in occupational inheritance in each of the four categories. The best-fitting models allow persistence in farming to vary by generation: the farm inheritance parameter is constrained to be equal for the first and second generations, but is allowed to differ for the NWNP men. These models are shown in the table as the Nearly Homogeneous Quasi-Independence Model and the Nearly Homogeneous UA Model. The inheritance parameters from these models show that the foreign-origin men were more likely to persist in farming than native whites of native parentage. This is consistent with the pattern of occupational persistence found in the younger cohort. Apart from the difference in farm inheritance, we find few differences in occupational mobility by generation among the men in the older cohort.

Our national data permit a broad perspective on the nature of occupational assimilation in the late 1800s. However, a national focus may hide important internal variation. Immigrant assimilation may have occurred differently in urban than rural areas, since immigrants were disproportionately concentrated in cities. To examine this possibility, we added various measures of county and community urbanization to the analysis. While the results are not reported here, we find that controlling for urbanization does not alter our conclusions.

⁷ For the Nearly Homogeneous Quasi-Independence model, the diagonal parameters are: white-collar, 3.74; upper blue-collar, 1.82; lower blue-collar 1.28; NWNP farm, 4.27; foreign-origin farm, 11.62. For the Nearly Homogeneous UA model, the diagonal parameters are: white-collar, 2.35; upper blue-collar, 1.78; lower blue-collar, 1.40; NWNP farm, 3.00; foreign-origin farm, 8.40. The uniform association parameter is 1.12.

⁸ The four-category mobility table for each generation is characterized by quasi-symmetry. With 3 degrees of freedom, the L^2 values for the quasi-symmetry model are: NWNP, .63; FP, .54; FB, .71.

⁹ Relaxation of the equality constraint on the structural growth parameters does not significantly improve the fit of the model. However, a model that allows both the Beta and Delta (exchange) parameters to vary by generation, while constraining the structural growth parameters to be equal provides a statistically significant improvement in fit over the model that constrains both the Alpha and Delta parameters to be equal for each generation. Thus, although the *overall* pattern of structural and exchange mobility is similar across the generations, some differences in exchange mobility may exist.

Table 4. Percentage Distribution by Occupation, Country of Origin, and Cohort/Generation: U.S. Males, 1880-1900

	Irish Origin		German Origin		Other Origins	
Occupation	1880	1900	1880	1990	1880	1900
<i>Younger Cohort: Foreign Parents</i>						
White-collar	6.0	22.1	15.7	22.6	10.6	26.6
Upper blue-collar	18.1	21.5	22.6	23.0	12.1	13.6
Lower blue-collar	48.3	34.2	25.5	25.5	33.7	26.1
Farm	27.5	22.1	36.2	28.9	43.7	33.7
Total	99.9	99.9	100.0	100.0	100.1	100.0
N	149		235		199	
<i>Older Cohort: Foreign Born</i>						
White-collar	9.8	27.9	16.7	18.1	15.8	22.8
Upper blue-collar	18.0	18.0	18.8	18.8	19.0	15.8
Lower blue-collar	59.0	47.5	25.4	26.8	28.5	22.8
Farm	13.1	6.6	39.1	36.2	36.7	38.6
Total	99.9	100.0	100.0	99.9	100.0	100.0
N	61		138		87	
<i>Older Cohort: Native Whites with Foreign Parents</i>						
White-collar	12.3	20.0	23.5	34.6	21.1	29.6
Upper blue-collar	13.8	23.1	21.0	16.0	19.7	21.1
Lower blue-collar	44.6	38.5	27.2	19.8	19.7	23.9
Farm	29.2	18.5	28.4	29.6	39.4	25.4
Total	99.9	100.1	100.1	100.0	99.9	100.0
N	65		81		71	

ETHNIC EFFECTS

Previous researchers have argued that occupational opportunities differed for specific national-origin groups, and thus we turn to that question. Because the men in our study were originally sampled in 1880, prior to the "new" immigration, the first- and second-generation men were largely from Northwestern European and German origins. It is possible to divide these men into three national-origin groups — Irish, German, or Other. For the foreign-born men in the sample, national origin was determined by the birthplace of the individual. For the second generation, we used the birthplace of the father, or, if only the mother was foreign born, her birthplace. The Other group is largely composed of men from United Kingdom (other than Ireland), Canadian, and, to a lesser extent, Scandinavian origins.

We consider ethnic differences in mobility among three groups: the foreign-origin men in the younger cohort, the foreign-born men in the older cohort, and the native born of foreign parentage in the older cohort. Some cell fre-

quencies are small when we construct four-category mobility tables by ethnicity for each of the three groups. Nevertheless, our data provide the only available national information on occupational mobility by ethnicity in the late 1800s.

The major patterns of mobility are summarized in Table 4. Focusing first on the occupational distributions in 1880, the Irish were the most distinctive group, a finding consistent with other research on ethnic differences at the time. The Irish are strikingly overrepresented in lower blue-collar occupations and underrepresented in white-collar and farm occupations.

The Irish also exhibit high rates of upward mobility. For instance, only 6 percent of the Irish men in the younger cohort had fathers in white-collar work in 1880, while some 22.1 percent of the sons were white-collar workers in 1900. The net result is that ethnic differences in occupation are smaller in 1900 than 1880. This is inconsistent with Thernstrom's (1973) thesis that the general "culture" of the Irish impeded their social mobility.

These points may be examined statistically by again testing models of quasi-symmetry. The

simplest model to describe ethnic differences in the relationship between origins and destinations in each of the three cohort/generation groups recognizes no differences in structural or exchange mobility across the three ethnic categories (i.e., Beta values differ by ethnicity but Alpha and Delta parameters are constrained to be equal). This model fits the data for all three groups (younger cohort — FP: $L^2 = 32.21$, d.f. = 27; older cohort — FB: $L^2 = 22.37$, d.f. = 27; older cohort — NWFP: $L^2 = 24.93$, d.f. = 27). Thus, despite their diverse occupational origins, the ethnic groups differed little with respect to mobility. Since this model adequately fits the data, we do not test more complex models that include varying Alpha or Delta parameters.

In summary, the data suggest that although the Irish started from a disadvantaged position relative to the other ethnic groups in the sample, this disadvantage was sharply reduced over the 20 year period. This was largely because structural mobility was more effective for the Irish than for the Germans or Others. Although the pattern of structural mobility was similar across groups, the position of the Irish improved most because of their relatively high concentration in low status "sending" origins in 1880.

OCCUPATIONAL POSITION AND ETHNIC QUEUING

This section focuses on the implications of the ethnic composition of areas for the residents' occupational attainment. The major issue addressed is whether old immigrants residing in areas with concentrations of new immigrants and blacks benefit from the presence of these lower status groups in the labor market.

The jobs available to both old and new immigrants alike may not be determined solely by qualifications and relative ranking. A queuing approach suggests that population composition may also influence occupational achievement (Frisbie and Neidert 1977; Lieberman 1980). If jobs and ethnic groups are ranked hierarchically, then positions filled by a particular ethnic group may depend upon the ranking of that group and the number of individuals in the labor market with a higher (or lower) rank in the queue. The underlying logic is that employers fill positions from the queue in descending order. An employer will fill a given position with the highest-ranked available person, and will only move down in the queue when no higher-ranked persons are available (Lieberman

1980).

The queuing thesis implies that a group's position is influenced by the relative size of populations ranked higher and lower in the queue. As noted by Lieberman (1980, p. 378), "In effect, this queuing notion is compatible with the long-standing ladder model that holds that increases in a lower-ranked population would tend to upgrade the population above them." Thus, we might expect the more established ethnic groups to benefit from the presence in the labor market of less assimilated groups. Although clearly consistent with the arguments of a number of scholars (e.g. Brown and Fuguitt 1972; Frisbie and Neidert 1977; Lieberman 1980), this hypothesis is not a foregone conclusion. The empirical literature on the relationship between minority concentration and occupational status in the contemporary United States has produced inconsistent results (Tienda and Lii 1987). Further, some (Frisbie and Neidert 1977; Wilson and Portes 1980) have argued that when minority groups reach sufficient size, they are able to withdraw from competition within the general occupational hierarchy by creating separate economic niches, often catering to racially or ethnically similar individuals. To the extent that the economic needs of low-ranking minorities are largely met within ethnic enclaves, the queuing thesis is weakened.¹⁰

The NPS data include information on county of residence in 1900, enabling us to link the individual-level data from the NPS to county-level data from other sources (Inter-University Consortium for Political and Social Research 1980), including the number of county residents born abroad by country of birth. From this information, we calculated the proportion of the county population classified as old and new immigrants. We also constructed a measure of the proportion of the county population that was black. Because blacks were relegated to the least desirable occupational positions, their concentration in a given area should also have implications for the status of whites. Finally, we created a rough indicator of the extent of industrialization in each county, the per capita invest-

¹⁰ There is some evidence that the queuing process is compatible with the existence of particular ethnic enclaves. Hout (1986), for example, shows that ethnic residential segregation creates in-group opportunities in middle-class service occupations. These opportunities exist in the context of a system in which most group members occupy a disadvantaged position in the labor market.

ment in manufacturing. In examining the effect of population composition on occupational position, it is necessary to control for industrial development since the areas attracting large numbers of immigrants were also the areas of greatest industrialization.

To assess the influence of population composition on occupational achievement, we regress the socioeconomic standing of the respondent's 1900 occupation on individual and county characteristics. Occupations in 1900 were coded into 1950 census categories and socioeconomic standing was measured in Duncan SEI units. Because socioeconomic status is measured at the interval level, ordinary least squares regression is employed.

Included among the individual attributes in the equations are age, literacy, the socioeconomic standing of the 1880 occupation (for the younger cohort, the standing of the father's occupation), and generation. Age is measured in completed years. Literacy is a dummy variable that indicates whether or not the man could read and write. Our measure of socioeconomic standing in 1880 is consistent with that for 1900. The 1880 socioeconomic status coefficient is a stability term. Thus, each other coefficient indicates the extent to which a change in socioeconomic standing between 1880 and 1900 is dependent on the associated variable (Bohrnstedt 1969).

The analysis is conducted separately for each cohort. Within each cohort, equations are estimated for the total sample and for the nonfarm (origins and destinations) men. Because the foreign-stock population was clustered in nonfarm occupations, the results may differ for the restricted sample. Of particular interest in the equations for both cohorts are potential interactions between generation and the population composition variables. These interactions tell us whether a county's composition had different implications for the different generations. The generations may have differed in their ability to benefit from an influx of new immigrants and blacks.

Table 5 provides results for the younger cohort. Means for the total and nonfarm samples are shown in columns 2 and 4, respectively. The total sample, on the average, lived in counties with 8.4 percent old immigrants, 2.1 percent new immigrants, and 6.9 percent blacks, whereas the nonfarm men lived in counties with a higher percentage of immigrants and a lower percentage of blacks. This pattern results from the

Table 5. Regression of Socioeconomic Standing in 1900 on Individual and County Characteristics: U.S. White Males Aged 25-34 in 1900

Independent Variable	Total Sample		Nonfarm Sample	
	Coefficient (S.E.) (1)	Mean (2)	Coefficient (S.E.) (3)	Mean (4)
<i>Individual Characteristics</i>				
Age	.011 (.165)	29.18	-.357 (.294)	29.12
Literate	10.082 (2.517)	.96	20.947 (6.319)	.98
Foreign parentage	-1.219 (1.149)	.33	-3.576 (1.872)	.48
Father's socioeconomic standing, 1880	.373 (.030)	19.58	.312 (.039)	27.19
<i>County Characteristics</i>				
Per capita investment in industry	.018 (.005)	125.44	-.005 (.009)	194.57
Proportion old immigrants	15.572 (9.797)	.08	29.751 (17.886)	.12
Proportion new immigrants	52.525 (17.444)	.02	45.635 (24.211)	.04
Proportion black	11.319 (3.661)	.07	23.169 (7.810)	.05
Constant	1.897 (5.465)		11.313 (10.690)	
R ² (adj.)	.143		.135	
N		1749		674

clustering of nonfarm men in the northeastern United States.

The equation summarized in column (1) regresses socioeconomic standing in 1900 on individual and county characteristics. As expected, father's occupational position and son's literacy are significant positive predictors of son's occupational position in 1900. Foreign parentage is not a significant factor. Men in counties with a high concentration of new immigrants and blacks experienced greater father-to-son status gains than those who lived in low concentration areas. A concentration of old immigrants also contributed to gains in occupational position, although the coefficient does not quite attain statistical significance. As previously indicated, the population composition effects are net of the per capita investment in industry.

Column 3 provides results from an identical equation restricted to nonfarm men. A similar

pattern of results is evident. Nonfarm men living in counties with a high concentration of immigrants and blacks experienced greater occupational gains than men living in areas with low concentrations. In the nonfarm sample, however, a significant difference is found between the father-to-son gains in position experienced by the NWNP group and the foreign-origin men, controlling for industrialization and population composition. Given roughly equivalent environments (with respect to the county-level variables), the occupational attainment of nonfarm men of foreign parentage was slightly lower than that of nonfarm men with native parents.

An additional question is whether the effects of population composition varied by generation. To address this issue, we tested for interactions between generation and the compositional variables. In both the total and nonfarm samples, none of the interaction terms was statistically significant, indicating that both generations benefitted equally from the presence of immigrants and blacks in their areas. The men in this younger cohort were almost all native born and those with foreign parents were almost exclusively from Northwestern Europe or Germany. Thus, consistent with a queuing perspective, the analysis demonstrates that these relatively well-established groups benefitted from the presence of lower-ranked individuals in the labor market.

Results from a similar analysis for the older cohort are provided in Table 6. Focusing first on the total sample, column 1 shows an extremely close relationship between socioeconomic standing in 1880 and 1900. The significant positive coefficient for literacy indicates that literate men were more likely to gain in status than illiterate men. Finally, advancement was greater among the native born of foreign parentage than the native born of native parentage. This generational difference is largely the result of differential participation in farming, and does not appear in the nonfarm sample.

Consistent with the younger cohort, men residing in counties with high concentrations of new immigrants and blacks experienced greater socioeconomic gains than men living in low concentration counties. Testing for interactions, we find that the gains did not differ by generation. In contrast, the effect of old immigrant concentration was different for the NWNP, the NWFP, and the foreign born. Specifically, a concentration of old immigrants in the county of residence had no effect on the native born of

Table 6. Regression of Socioeconomic Standing in 1900 on Individual and County Characteristics: U.S. White Males Aged 45-54 in 1900

Independent Variable	Total Sample		Nonfarm Sample	
	Coefficient (S.E.) (1)	Mean (2)	Coefficient (S.E.) (3)	Mean (4)
<i>Individual Characteristics</i>				
Age	-.209 (.137)	49.36	-.085 (.245)	49.20
Literate	4.865 (1.751)	.94	15.070 (4.981)	.98
Generation				
Native whites, foreign parents	2.980 (1.521)	.13	3.565 (2.605)	.18
Foreign born	-.926 (1.372)	.22	-1.402 (2.407)	.29
Socioeconomic standing, 1880	.651 (.023)	20.22	.646 (.032)	28.57
<i>County Characteristics</i>				
Per capita investment in industry	.017 (.004)	132.19	.000 (.007)	197.59
Proportion old immigrants	7.490 (8.137)	.09	9.021 (14.390)	.12
Proportion new immigrants	70.379 (21.348)	.02	68.635 (31.328)	.04
Proportion black	9.969 (3.143)	.07	12.046 (6.746)	.05
Proportion old immigrants x NWF	-73.999 (32.203)	.00	-85.320 (45.498)	.01
Proportion old immigrants x FB	-62.525 (26.164)	.01	-67.691 (38.003)	.02
Constant	12.177		1.782	
R ² (adj.)	.396		.397	
N		1629		734

native parentage, while it reduced socioeconomic gains among the native born of foreign parentage and the foreign born. This pattern persists in the nonfarm sample, although the interaction terms do not quite attain statistical significance.

The socioeconomic gains associated with new immigrant and black concentration are consistent with a queuing approach to occupational attainment. We would expect the presence of substantial numbers of new immigrants and blacks in the labor market to boost the position of native born whites and older immigrants, both ranked higher in the queue. However, the

effect of old immigrant concentration found in our older cohort is not so readily explained. While one might expect a concentration of old immigrants to impede advancement among the foreign born, it is less clear why the proportion old immigrant should similarly influence the second generation. Here, it is important to recall that both the first- and second-generation men in our sample were from Northwestern European and German origins. Thus, both groups may have been in direct competition with the pool of old immigrants in their areas. If so, the higher the concentration of old immigrants, the greater the struggle for occupational advancement and rewards.

CONCLUSION

This study sheds considerable light on the important historical question of whether the United States was an open society almost 100 years ago. Was the image of openness real, or did the new Americans experience unusual obstacles to "making it" within the society? While our data clearly show that immigrants and their children were occupationally disadvantaged outside the farm sector, our analysis finds little evidence that generation was a serious roadblock to occupational opportunity. Given similar origins, the immigrants, their children, and the third generation had roughly similar opportunities to "move upward" in the occupational system. Indeed, a dominant theme of our findings is the relatively high chances of all groups to improve their occupational position.

The major difference between the generations pertains to persistence in farm occupations. Though less concentrated in farming than native whites of native parentage, first- and second-generation men with farm origins were apparently reluctant to leave agricultural pursuits. This reluctance may reflect the tight-knit nature of immigrant agricultural communities. It may also be related to the long commitment of some immigrant families to living off the land.

Why our results differ from previous researchers, such as Thernstrom in his study of Boston, is not clear. Immigrants in Boston apparently experienced less occupational opportunity. Boston was a city with a long-established Protestant Yankee elite (Baltzell 1979), and it is possible that the established native groups were better organized to resist occupational change.

Our results are relatively consistent with post-World War II research that has shown genera-

tion to be a fairly weak predictor of occupational mobility over time. In conjunction with the post-World War II research, our study indicates that white men over the last century have generally not faced serious barriers to mobility related to generation.

We have also shown that, at least among the old immigrant groups, national origins posed little obstacle to mobility. Of the three major ethnic groups, the Irish started from a clearly subordinate position compared to the Germans or other Northwestern European groups. However, the Irish achieved relatively high mobility, so that ethnic differences diminished over the twenty-year period. Again, this finding conflicts with Thernstrom's results for Boston, where the Irish were the dominant ethnic group and competed directly with the Yankees. Of course, these conclusions must be made cautiously, for our samples are relatively small in size and limited to three national origins.

While we are unable to study directly the social mobility of the new immigrant groups, our analysis reveals the importance of the new immigration to understanding opportunity among the old groups. Both inter- and intra-generational socioeconomic gains between 1880 and 1900 were greatest among men living in counties with a relatively high concentration of new immigrants, suggesting that the new immigrants entered low status positions, effectively boosting the standing of the old immigrants. Further support for this interpretation is provided by the similar effect of black concentration in the county. Because both blacks and Southern and Eastern Europeans ranked low in terms of skills and employer preferences, we would expect their presence in substantial numbers in the labor market to have similar effects on the occupational position of the higher-ranked NPS men. Overall, we conclude that generation and ethnicity posed few barriers to opportunity among the old immigrants, but no definitive conclusions may be reached with respect to the new immigrants and blacks.

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COMMENTS AND REPLIES

COMMENT ON MARKOVSKY, WILLER, AND PATTON,
ASR, APRIL 1988

POWER RELATIONS IN EXCHANGE NETWORKS: A COMMENT ON "NETWORK EXCHANGE THEORY"*

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Markovsky, Willer, and Patton (1988, henceforward MWP) attempt to "provide higher levels of rigor, power and specificity than are found in earlier approaches" to the analysis of power relations in exchange networks, particularly the work of Cook, Emerson, Gillmore, and Yamagishi (1983) which "clearly overlaps their own in scope" (MWP 1988, pp. 220-221). While acknowledging many points of "overlap," we would like to clarify one significant difference between these two research programs. We will demonstrate (a) that the measure of power they propose is inadequate as a general measure, (b) that some of their axioms do not have a clearly articulated theoretical basis, (c) that some of the methodological procedures in their experiments are not consistent with the theory upon which their predictions are based, and (d) that they have overstated the uniqueness of their "network exchange theory," ignoring relevant work based upon Emerson's exchange network theory (Emerson 1972a, 1972b, 1976, 1981) which addresses some of the topics they identify as topics for future theoretical development.

First, our own theoretical and empirical efforts have been devoted primarily to extending and refining power-dependence theory as originally developed by Emerson (1962, 1972, 1976, 1981). The most important advancement in this effort came with the merging of power-depend-

ence notions with exchange network concepts, a task initiated by Emerson in the late 1960s. Exchange networks represent structures of access to exchange opportunities for actors (either individuals or corporate entities). Our empirical work has tested implications derived (sometimes informally) from this theoretical framework. Cook et al. (1983), for example, demonstrate that under certain specifiable conditions power does not necessarily reside in centrally located network positions. Extensions of this work to apply power-dependence notions to networks including positive connections and "mixed" networks are discussed in Yamagishi, Gillmore, and Cook (1988) and reported in earlier publications (see Cook 1982; Emerson 1981; Cook and Emerson 1984). We have been studying for some time what MWP label "new theoretical directions," specifically, flow-networks and networks including positive connections. In fact, the example identified by MWP (p. 232) of the "manufacturer who must obtain all components for a synthetic product before that product becomes a viable source of revenue," is a good example of what Emerson (1976) referred to as productive exchange (one type of positive connection). The works published by Cook (1982), Cook and Emerson (1984), Cook et al. (1983), and Yamagishi et al. (1988) demonstrate clearly that "exchange dynamics that occur in positively connected networks differ markedly from those in negatively connected networks," as claimed by MWP (p. 232). Yamagishi et al. (1988) not only demonstrate the differences between negatively connected networks and positively connected or mixed networks, but also specify how the basic power-dependence principles can be applied to positively connected networks as well as to negatively connected networks.

A "GENERAL" MEASURE OF POWER WHICH FAILS TO BE GENERAL

The primary contribution of the work of MWP is the explicit specification of a "better" measure of network-wide power, the graph-theoretic index of power (GPI). This measure "determines relative power for all positions in any network that meets the scope conditions." The

*The authors names have been listed in a randomly determined order. We appreciate the help we received from Jodi O'Brien and Joe Whitmeyer in preparing this comment and the support of the National Science Foundation (SES8519319).

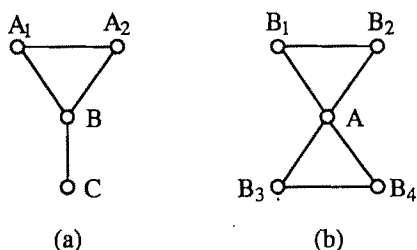


Figure 1. Examples of exchange network structures

measure counts the paths of various lengths connecting positions in the network, excluding intersecting paths. Unfortunately, the proposed method produces untenable predictions in some networks, such as those shown in Figure 1. While the goal of formalization is laudable, no measure has yet been devised that produces consistent predictions for some networks and that applies to more than negatively connected networks. [The measure produced by Bonacich (1987) is an exception, though it cannot handle mixed networks.] In fact, the predictions produced by MWP are not much better and in some cases are actually worse than the "informal" predictions based on Emerson's original power-dependence principles.

Consider the four-actor network shown in Figure 1a. Using the MWP measure, $P(1)A = 2 - 1 = 1$, $P(1)B = 3 - 1 = 2$, and $P(1)C = 1 - 1 + 1 = 1$. Based upon their axioms and theorems (p. 225), this network should break into two subnetworks of dyadic relations between A_1 - A_2 and between B - C , each of which is power-balanced. We consider this prediction untenable since, according to this prediction, B is assumed to act against his or her own self-interest. That is, by giving up the B - A_1 exchange opportunities (Axiom 2), B throws away his or her base of power over C. To clarify this point, let us assume that the network breaks down into two dyads as predicted by MWP. Let's also assume that each opportunity represents a profit-overlap of 24 units (i.e., 24 units of profit can be divided between the exchange partners). According to MWP, each actor is predicted to receive one-half of the profit overlap or 12 units. Compare this to another scenario in which B occasionally exchanges with A_1 and obtains a 12-12 split of the profit. If this happens, that is, if B does not abandon the A_1 - B opportunities as predicted by MWP, C will be excluded occasionally from the exchange. It becomes clear that C depends on B more than B depends upon C in the B - C exchange relation; B is the only

exchange partner for C while B can get 12 units of profit in an A_1 - B exchange. It is not reasonable for B to abandon the opportunities that provide alternatives reducing his or her dependence on C. Power-dependence theory predicts that the final split of profit (as a result of the use of power over time) is achieved where each party's dependence on the other is equalized: that is, the final profit split in the B - C relation is predicted to be around 18-6; both B and C earn 6 units more than their respective best alternatives (0 units for C and 12 units for B, although the fact that the alternative of 12 units of profit for B is an uncertain outcome must be taken into account such that the power difference between the two will not be as prominent as 18-6). Thus, an "informal" application of Emerson's power-dependence principle predicts (1) that the network will not break into two subnetworks, and (2) that the profit split in the B - C relation will not be even (i.e., B's profit will be greater than C's). A computer simulation of this network with 100 trials and 100 replications indicates that B's profit (14.02, s.d. = .77) was actually much greater than C's (9.98, s.d. = .77). B traded with each A 22.76 times on the average during 100 trials, compared with 38.41 times with C. Thus, the frequency of A_1 - B exchange was far from zero.

Finally, the untenability of the predictions based on MWP's method is most evident in the five-actor network shown in Figure 1b, where $P(1)A = 2$ and $P(1)B = 1$. According to MWP's axioms and theorems, this network should break into two dyads— B_1 - B_2 and B_3 - B_4 —and an isolated actor—A. This prediction is also untenable because A can break into the dyads by offering slightly better profits than the 12-12 split (given a profit overlap of 24 units). Once A succeeds in completing an exchange with one of the B's, for example B_1 , B_2 is totally excluded from any exchange opportunities. On the other hand, even when a B_1 - B_2 exchange occurs, A is still included in the power-balanced three-actor circle, A - B_3 - B_4 . In this sense, B is more dependent on A than A is on B. Thus, A is predicted to have more power than B. The results of another computer simulation (with 100 replications and 100 trials) are consistent with this "informal" prediction and clearly inconsistent with the "formal" prediction derived from the MWP measure. In this simulation the average frequency of A - B exchanges was 21.95 and the average profit split was 12.89, which is significantly different from 12-12 ($t = 15.14$, d.f. = 99, $p < .001$).

AXIOMS OUT OF NOWHERE

These are only a few examples of the network structures in which MWP's measure of power yields untenable predictions. However, it is possible to revise their axioms and theorems to take care of some of these anomalies. For example, an axiom can be added stating that when i 's power declines as a result of giving up certain exchange opportunities (such as the A_i - B relations for B in Figure 1a), i will ignore Axiom 2 and keep using those opportunities. In fact, every time an anomaly appears, a new axiom (or a rule to limit the applicability of an axiom) could be invented. The issue is not whether the existing axioms and theorems provide correct predictions for any specific exchange network; rather, it is the theoretical basis of the derivations. A particular measure is meaningful only when tested against underlying theoretical principles.

The fundamental problem with the MWP formulation is that their axioms are introduced without specifying basic theoretical principles. For example, Axiom 2 states: " i seeks exchange with j if and only if i 's power is greater than j 's, or if i 's power relative to j equals or exceeds that in any of i 's other relations." What this axiom means, roughly, is that among all possible partners an actor prefers to exchange with the least powerful partner. Unfortunately, MWP do not state why this should be the case. There are at least two reasons for this axiom, each based on a different theoretical premise.

First, the axiom can be based on a rational strategy: actor i expects to make the best deal by exchanging with the least powerful partner. At a minimum this requires that each actor has perfect information about the network and is capable of calculating the GPI for each of his or her potential exchange partners (a highly restrictive assumption). A second premise is that after repeated exchanges an actor i learns that exchanging with particular partners is rewarding, and that the partners who provide the greatest reward happen to be the ones specified in this axiom. In brief, the first premise implies that an actor's choice is based on perfect information, whereas the second premise implies that the structure of the network induces an actor to behave in a certain way.

This issue has important implications for the design of a relevant experiment. If the axiom is based on the first premise, repeated exchanges are not required. Once the subjects are given full

information and time to contemplate it, predictions based on Axiom 2 should result on the first trial. If the axiom is based on the second premise, repeated exchanges are required since the subjects have to experience the implications of trading with each of their potential partners before they can act.

It is not clear which of the two rationales MWP adopt as the basis for Axiom 2. However, since neither full information nor the subject's ability to apply GPI is included in the "scope conditions" of their theory, on which they place such emphasis, it is reasonable to assume they are working with the second rationale. If this is the case, the number of exchanges in any experiment should be large enough for each subject to experience the full implication of trading with each of his or her partners. Furthermore, since the ultimate source of power in the MWP model is the frequency of each actor being excluded from exchange, the emergence of a differential distribution of power requires that the subjects have sufficient experience of being excluded from exchange. Unfortunately, the subjects in the MWP experiment stayed in the same position for only five trials before rotating to another network position. Five trials is not sufficient for the subjects to learn the implications of trading with particular partners and to experience frequent exclusions.

The fact that their predictions were supported despite this violation of an important theoretical requirement raises the serious possibility that the results were produced by factors irrelevant to their theory. One alternative is the strategic considerations of the subjects that underlie the first rationale for Axiom 2. If this were the reason for their results, then very different results would be obtained under slightly different conditions. That is, if full information about the network structure was withheld (and the subjects were not rotated), the same results would likely not emerge within five rounds of exchange. Furthermore, the predictions based on MWP's measure will become harder to support as the network structure becomes more and more complex and subjects have a harder time making accurate predictions concerning their relative power in the network, even with full information.

A FINAL WORD

Continued efforts to clarify the basic theoretical structure of power-dependence theory and ex-

change network theory are important, but these efforts are hindered when investigators use different terminology, obscure differences in experimental procedures that may account for different findings, and generally talk past one another. The link between what Willer and Patton (1987) and MWP call "exclusion," for example, and power-dependence principles (see Emerson 1969; 1972a,b) is never clearly articulated. If the exclusion principle is somehow fundamentally different from power-dependence principles, this needs to be demonstrated. Furthermore, the term "power domains" is introduced by MWP to refer to what Emerson called an exchange network. Within each domain (or network) exchange in one relation affects exchange in another relation, whereas across "power domains" (or networks) exchange in one relation does not affect exchange in another relation. If this is a uniquely different concept, then it needs to be explained more fully. As it stands, it appears to be simply renaming an older concept and calling it new.

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REPLY TO YAMAGISHI AND COOK

THEORY, EVIDENCE, AND INTUITION*

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The two approaches to exchange networks that are at issue here were offered as scientific theories. As such, both are subject to three conventional modes of critique. These consist of identifying (1) a logical contradiction or

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conceptual ambiguity, or (2) a falsified prediction, or (3) an alternative theory having greater analytic power, scope or descriptive accuracy.¹ In this rejoinder, we will show that the criticisms by Yamagishi and Cook (henceforward YC) failed to meet any of these criteria.

RECENT DEVELOPMENTS

Cook, Emerson, Gillmore and Yamagishi's (1983) experiments showed that central positions in exchange networks are not always powerful. In their setting, any two directly connected subjects could negotiate over the division of a replenishable resource pool. Under a "1-exchange rule" (our term), subjects could make a deal with one other in each of a series of rounds. High-power positions were predicted to accumulate more resources. Their theory did not specify relative sizes of resource pools, number of exchanges per round, amount of information available on others' activities, permissible negotiation and decision strategies, or whether any of these mattered. Hypotheses were not formally derived from theory, but justified through informal, *ad hoc* arguments. Near the end of their article, however, Cook et al. presented a "vulnerability" model, the first explicit network-analytic model of power in the power-dependence tradition. Its predictions were consistent with the reported data and it eliminated the need for an *ad hoc* approach.

Willer (1986) demonstrated that the vulnerability model predicted impossible outcomes for some networks. Cook, Gillmore, and Yamagishi (1986) responded with a revised model and several predictions. Our research falsified the predictions and the revised model proved to be uninterpretable. [See Markovsky, Willer, and Patton 1988 (hereafter MWP), p. 227 and note 3.] In their critique, YC do not use or defend the vulnerability models, but revert to the *ad hoc* mode.

Our theory predicts relative power levels of positions in exchange networks. We sought to make it explicit, rigorous, abstract, general, scope-defined, accurate, and consistent with prior empirical findings. It includes four axioms used to generate theorems and hypotheses

for any network within the theory's scope. In addition, it also predicts network breaks, power shifts, and some major consequences of minor changes in Cook et al.'s experimental conditions.

Our research tested a number of hypotheses. Some contradicted Cook et al. (1983, 1986); some addressed phenomena not anticipated by their theory or any other. The results supported our theory and demonstrated the sensitivity of Cook et al.'s results to their 1-exchange rule.

In sum, applying all three modes of critique, we showed that Cook et al.'s network exchange theory generated contradictions and its predictions were falsified. We provided an alternative with greater analytic power, scope and descriptive accuracy.

THEORIES AND INTUITIONS

YC offer four major objections to our work: (1) the theory is not general because it "produces untenable predictions," (2) its axioms come from "out of nowhere" because we failed to state the "underlying theoretical principles," (3) some of our research methods are "not consistent" with our theory, and (4) we overstate the uniqueness of our theory by failing to account for their recent work.

Failed Predictions

YC assert that our theory "produces untenable predictions." This serious claim should be supported by exposing a contradiction or presenting negative evidence. They do neither. Instead, they argue that our theory's predictions for two networks run counter to what *they believe* is "rational" and "likely." (They seek to bolster their cause by declaring these two to be "only a few examples of the network structures for which [the theory] provides untenable predictions." However, they provide no evidence of other structures, and so we cannot address this claim.) Such intuition is potentially informative and may motivate theoretical conjectures and tests, but it does not substitute for logical and empirical analyses. It is not a valid basis for criticism.

YC's analysis of their Figure 1a is misleading on four counts. First, they claim that Axiom 2 predicts that B will "act against his or her own self-interest ... by giving up the B-A exchange opportunities ... [and] throw away his or her base of power over C." Assume "power" to be

¹ See Heckathorn's (1984) excellent discussion of these criteria. Briefly, *descriptive accuracy* refers to empirical corroboration; *scope* is the breadth of the class of phenomena to which a theory applies; *analytic power* is much like parsimony. (See also Willer 1987.)

the graph-theoretic power index (GPI) from Axiom 1. Axiom 2 states that

i seeks exchange with *j* if and only if *i*'s power is greater than *j*'s, or if *i*'s power relative to *j*'s equals or exceeds that in any of *i*'s other relations.

If $p_B > p_A$, as YC claim, then several predictions would obtain from substituting the A's and B for *i* and *j*: neither A will seek exchange with B; A₁ and A₂ will seek exchange with each other; and B will seek exchange with both A's. This contradicts their claim that B will "throw away" the A's — the A's simply do not seek exchanges with B.

Second, YC miscalculate the GPI. A₁'s GPI under a 1-exchange rule is 2, not 1. It is obtained as follows, where multiple paths of a given length from A must have only A in common: two 1-paths (A₁-A₂ and A₁-B) minus one 2-path (A₁-B-C or A₁-A₂-B, but not both because they intersect at B), plus one 3-path (A₁-A₂-B-C) equals 2. YC do not count the 3-path. Since $p_A = p_B$, both A's will seek exchange with B.

Third, the basis for YC's predictions for Figure 1a requires explication. Without any model of "dependence" or "rationality," they predict the B-C exchange "to be around 18-6" favoring B, and that "the power difference between the two will not be as prominent as 18-6." Which-ever the case, there appear to be two possible scenarios: (1) B could drive up C's offers by seeking exchange only with the A's. B must then refuse C's offers of 13, 14, 15, ... and accept 11, 12, 13 or 0 from the A's.² (2) B entices all others into a bidding war. This would require the A's to accept 11, 10, 9, ... or 0 in lieu of 12 from each other. Both possibilities contradict Cook et al.'s assumption that actors exchange in the relation offering the highest value (Cook et al. 1983, p. 280 and *passim*). It is also unclear why, in an approach that claims to predict power based on dependence, YC invoke some notion of "rationality."

Fourth, YC incorrectly imply that their computer simulations are empirical tests for the Figure 1 networks. Simulations employ logical calculi to draw implications from prior assumptions. In this case, they predict what would happen to a set of actors employing a specific set

of strategies in a given network structure. Like theories, simulations specify relationships among sets of concepts and statements. Their "results" are logical derivations, not data.³

YC's GPI's for Figure 1b are correct. However they do not follow the instructions for applying the axioms. When a break occurs, "power indices are recalculated within the resulting subnetworks" (MWP, p. 226) and "exchange in one relation will often temporarily alter the relative power of nearby positions. This dynamic is captured through an iterative application of the GPI" (MWP, p. 225). As we explain, GPI's are recalculated after each exchange *within* a given negotiation round, each set of GPI values being "in force until the next exchange occurs or until the end of the round." Applying the procedure to Figure 1b, as soon as two B's reach agreement, A and the remaining two B's form a triangle with recalculated GPI indices of $p = 1$ for all three actors. Then A-B₁, A-B₂ and B₁-B₂ exchanges become equally likely and no power advantages exist.

This iterative procedure also applies to Figure 1a. Axiom 2 states that B will initially seek exchanges only with C. After recalculating, $p = 1$ for all positions. The axiom then no longer applies and B seeks exchange with all three others.

Axioms Out of Nowhere

YC claim that

The issue is not whether the existing axioms and theorems provide correct predictions for any specific exchange network; rather it is the theoretical basis of the derivations. ... The fundamental problem with the MWP formulation is that their axioms are introduced without specifying basic theoretical principles.

³ YC do not describe the simulated actors' strategy, thus we may only speculate about their findings. First, the large number of repeated trials in simulations tends to generate divisions of 23-1 between power-differentiated actors. The 14-10 split was thus "significantly" closer to equality than those observed in their other networks (Cook et al. 1983, p. 297). To declare a deviation of ± 2 "great" is an overstatement. Second, actors with rigid decision algorithms (Cook et al. 1983, p. 296; Markovsky 1987, 1989) are sometimes "foolish." For example, an actor like C may lose out on 12-12 divisions with B by not meeting B's demands at the proper time. This forces C to make offers slightly but consistently higher than 12, such as the observed 14-10 divisions.

² In general, B would receive 0 when the A's exchange with each other, 11 when breaking into a prior A₁-A₂ deal (i.e., B offers 13 to one of the A's); 13 when one of the A's breaks up a prior deal between B and the other A; and 12 otherwise.

First, by declaring that empirical veracity is not an issue, YC attempt to discount the corroboration of our theory's predictions and the falsification of their own. The confirmation statuses of competing scientific theories is always a central issue. Second, our axioms provide an explicit "theoretical basis" and set of "basic theoretical principles" for our derivations and predictions. The notion that axioms *must* be founded on even more basic principles leads to an infinite regress. We would, however, commend efforts to construct a deeper set of axioms whose theorems subsume our own, and that also generate theorems which our axioms cannot.

Perhaps by "basic theoretical principles" YC mean "orienting strategy" (Wagner and Berger 1985) or "metatheory." Without denying the profound impact that metatheories have on theories, one may explicate and test a theory without reference to motives, values, historical circumstances, political agendas, private intuitions, or other factors that play a role in a theory's genesis. We do cite a number of sources of theoretical and methodological inspiration (e.g., Willer 1987; Willer and Anderson 1981).

Inconsistent Methods

To again draw from YC (emphasis added):

Five trials is not sufficient for the subjects to learn the implications of trading with particular partners and to experience frequent exclusions ... this [is a] violation of an *important theoretical requirement*...⁴

The violated "theoretical requirement" is, ostensibly, that "the ultimate source of power in the MWP model is the frequency of each actor being excluded from exchange." Our methodological choices cannot violate this "theoretical requirement," however, because it simply is not a requirement of our theory.

YC do not identify any logical or empirical inconsistency. The only inconsistency is between our procedures and their intuitions. They construct a false dichotomy by claiming that *we must assume* power differences cannot emerge unless subjects calculate the GPI for themselves, or unless there is a large number of rounds so that subjects may "experience frequent exclusions." Our theory requires neither assumption.

They further assert that the power differences

we observe might not have emerged so quickly if we restrict information or test more complex network structures. We agree, and even state that "having information on negotiations other than one's own is expected to accelerate the use of power, but not affect relative power" (MWP). For this reason, however, they dismiss our results as artifactual.

To see the flaw in YC's logic, suppose that chemical principles allow us to hypothesize that, "If mass x of acetic acid combines with mass y of sodium bicarbonate, then mass z of carbon dioxide will obtain." We combine these substances and measure z until the reaction terminates. YC would now argue: "But if you lower the temperature or dilute the acid without recording for a longer time, the results *might* change. Therefore your original results were 'produced by factors irrelevant to the theory.'" Their premise is correct but the conclusion does not follow. The point they raise is *not a problem in the research as it was conducted*. They identify an empirical factor that *might* interfere with the theorized process if not controlled by the experimental methods, i.e., by waiting for the reaction to terminate. In our network research, the four negotiation rounds were more than adequate for us to observe "reactions."⁵

Overstating Uniqueness

YC accuse us of "ignoring relevant work based upon Emerson's exchange network theory." The primary basis of this claim stems from our informal discussion of future directions for our theory — directions which they "have been studying for some time." First, YC exaggerate the corpus of work to which they claim we should refer. For instance, all four of the cited articles on "positive connection" (Cook 1982; Cook et al. 1983; Cook and Emerson 1984; Yamagishi, Gillmore, and Cook 1988) pertain to one study involving two 5-person networks and use an *ad hoc* method for obtaining hypotheses. The full data analysis was only reported by Yamagishi et al. (1988), several months after our paper went to press. Further, YC clearly imply that they had addressed all five of the areas we discuss, but are noting just two as

⁴ Our report clearly indicates that there were four rounds of negotiations, not five.

⁵ More precisely, using the same methodological convention employed in YC's own research, we employ sufficient negotiation rounds to allow resource strata to stabilize. In the future we will be more explicit about this criterion.

examples — “positive connections” and “flow networks.” Not only have they yet to provide a theoretical model for these phenomena, but to our knowledge they have never even mentioned two of the other areas — “M-exchange networks” and “no-round exchange.” Both of the latter were formally subsumed by our theory. The fifth area — “resource-pool values” — was a factor in only two of the networks they studied and, as with our own theory, still is not formally subsumed.

Second, we included our discussion of future directions to illustrate a potential for continued theoretical growth. The appropriate time for careful inter-theory comparisons is when we (or others) can formally derive and test new hypotheses. We never stated or even implied that other theories were not addressing some of the issues we discussed, and assume that even if others are working on them, we may also.

TRANSCENDING INTUITION

Our theory evolved over a period of several years, benefitting in various ways from Willer's ongoing theoretical research program, prior theories and research, simulations and, of course, from intuitions. Most of all, it benefitted from the three authors' friendly efforts to falsify the others' provisional axioms via “thought experiments.” This not only strengthened successive versions of the theory, but also forced them to be intersubjectively testable.

We studied previous contributions in related areas. As it became obvious that we had something different, however, we focussed on being as explicit as possible in our concepts and theoretical statements, and maximizing analytic power, scope and descriptive accuracy — less so on the number and nature of linkages to previous work.⁶ We gained more confidence in our theory as we discovered its ability to predict things that we had not set out to explain. Thus, it not only began to codify our intuitions, it transcended them.

When we felt that the theory was ready to test, we made certain that at least some of its predictions contrasted with those of alternative theories. We conducted tests of those and other

predictions, and then published our theory and findings. YC contend that we did not pay adequate attention to power-dependence notions. To the contrary, only by paying careful attention to that work could we have devised the critical tests we reported. Instead of seeking attention for the power-dependence approach through claims such as this, YC can do a far greater service by refining its concepts, stating explicit axioms and scope conditions, systematically deriving hypotheses, and designing critical tests that more definitively establish its superiority.

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⁶ Ironically, the acceptance of our 1988 paper was conditional on the removal of eight manuscript pages more fully comparing our theory with those of Cook et al. (1983), Marsden (1983) and Bonacich (1987). These are available from the first author.

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COMMENT ON GESCHWENDER, CARROLL-SEGUIN,
AND BRILL, ASR, APRIL 1988

THE PORTUGUESE AND HAOLÉS OF HAWAII*

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The article by Geschwender, Carroll-Seguin, and Brill (GCB 1988) on the Portuguese and Haolés of Hawaii has raised some local controversy in Hawaii. We are particularly concerned about the accuracy of their taxonomy, the appropriateness of their hypothesis, and the credibility of their analysis.

1. Are they accurate about the ethnic taxonomy?

We agree with GCB that ethnicity is a "social construct," but suggest that the social construction process works differently for sociologists than for the people who apply such concepts to

themselves. The everyday-life practical purposes of the latter allow for much rougher categorizations than are required by social scientists who analyze and report quantitative data. So it is surprising that GCB assert certain categorizations "roughly" in their opening sentence. As GCB note, popular usage in Hawaii often distinguishes between "Haole" and "Local." Haole can "roughly" mean Caucasian, which is helpful when State Health statistics use the latter term; and Haole is also "roughly" what is meant by the U.S. Census term "white." But GCB are not correct that Local "roughly" means "Other," nor that the Haole vs. Local contrast "roughly" equals Caucasian vs. Other, and certainly not when the key example is the Portuguese and their special story in Hawaii. There are several interesting disagreements in "local culture" about ethnic categorizations: the distinction between Local and Haole causes distress for many "local Haolés," and while Portuguese are not Haolés, they are definitely Caucasian.

The ethnic taxonomy in Hawaii has evolved since the beginning of western contact two hundred years ago, and it continues to change even as we debate it (see Adams' 1938 classic work; Wittermans 1964; Yamamoto 1979; Wooden 1981; Hormann and Lind 1982; Whittaker 1986; Weinstein 1987). Social categories in everyday use have fuzzy boundaries for very practical purposes. This is especially true of Hawaii, where much rides on the outcome of a current debate regarding the definition of "native Hawaiian." In a state with a high rate of intermarriage (depending on how categories are defined), many people identify with more than one ethnicity, invoking them differently in different situations. Indeed the "academic" debate here is important because people in the process of defining and categorizing themselves are active participants in this debate and mistakes can be insults.

2. Is their hypothesis appropriate and sufficient for explanation?

GCB argue that "ethnicity in Hawaii is ... [a product] of the capitalist world-system," that the Portuguese — although European — "came from the periphery to serve as plantation laborers" about one hundred years ago, and that differentiation from other whites is still evident in 1980 Census data. Arguing from "world-systems theory," they make some grand claims, e.g., that "race and ethnicity emerged as social

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constructs with the incorporation of new peripheral areas into the capitalist world-system... from the capital-inspired movement of peripheral peoples to areas in which cheap labor was needed" (pp. 515-6). They say that "race and ethnicity are qualitatively different in the modern world-system from earlier phenomena" (p. 515), but they do not tell us how. We acknowledge shifts in the meaning and use of these concepts, but we would insist that the problem is to see how inherited ideas and concepts find new applications (and thus shift in meaning) with changes in the mode of production. The process of "primitive accumulation" is best understood *not* as a process of accumulating capital to hire wage workers (as GCB suggest), but as the process of transforming the relations of control over the means of production. This can occur in different ways, and the way it occurred in Hawaii is different from the way it occurred in Western Europe, in Africa or in South Asia (Kent 1983; Sullivan and Hawes 1984-85; Geschwender 1980-81).

GCB further assert that "ethnic emergence does not require a previously shared culture, sense of identity, or a common region of origin.... Neither physical nor cultural characteristics shape an immigrant people" (p. 515). We agree that none of these is a *sufficient* condition for the emergence of an ethnic group. Indeed, in our view it is likely that none is a necessary condition either. But GCB do seem to have some essentialist commitments. They write, "The crucial [sic] factor in ethnic formation was that those from core societies brought capital, while those from peripheral societies had only their labor power" (p. 516). In our view, this is a clear example of class reductionism. The authors then argue that the largest European immigrant group to enter as plantation laborers was Portuguese-Americans and conclude that while these people were seen to be Caucasian, "the distinction between Haoles and Portuguese was not caused by cultural differences, but rather by the combination of region of origin (core versus periphery) and entry into the social organization of production in different class situations" (pp. 517-518). Support for this assertion is provided by collapsing 'country of origin' into core/periphery categories, thus allowing cultural differences and manifest (if superficial) racial differences to be obscured by the global division of labor.

Evidence offered by GCB appears to undercut their claims. They point out that between

1881 and 1897, some 1400 Germans were brought to Hawaii as plantation laborers. That they had a different experience than the Portuguese is explained by the fact that "they were preceded by German capitalists" and thus "German immigrants were brought into a multi-class community and did not become identified as agricultural laborers" (p. 517). Following their hypothesis and using ethnicity as a social construct in the sense implied by the authors, we would expect these plantation Germans to be labeled 'Bosch' or 'Heinies' (or some such) to identify them with 'agricultural workers' and distinguish them from other higher-status Germans. Although some Germans left Hawaii at the onset of World War I, those who remained (including, presumably, some who were plantation laborers) "were rapidly integrated into the Haole community" (p. 517). Also, 600 Scandinavians who came as laborers "were experienced artisans and tradespersons" and quickly became absorbed as Haoles. Could cultural or 'racial' factors have something to do with the fact that Germans and Scandinavians were immediately considered Haoles?

GCB get off to a good start by noting that because "the first foreigners [in Hawaii] were light-skinned Europeans, the concept [Haole] took on racial and, later, class connotations" (p. 516). But we would point out that these first Europeans were white New England Congregationalists, the stereotypical white Anglo-Saxon possessors of the Protestant Ethic and quite unlike the 'swarthy,' Catholic, southern Europeans, with 'odd habits' about play, celebration, time, work. Most of those first Europeans did *not* bring capital. Many brought religion, and all brought modern entrepreneurial skills, a work ethic, and had advantageous connections and resources back in New England. Their initial success came from purchasing land from Hawaiians who, without a modern (bourgeois) sense of 'property,' could not appreciate the consequences. After the Great Mahele (1848) land division, this process became legitimated with the cooperation (intended and unintended) of the traditional 'royalty' (*alii*). These early Europeans in Hawaii and their descendants have been quite conscious of 'race' and 'culture' as non-reducible elements of their ethnic identity; it will not do to cover over these distinctions by simply saying it was people from the core excluding those from the periphery. Such a view trivializes the concepts of race and culture. As Bernhard Hormann (1989) points out, "the

Portuguese were immediately differentiated from the other Caucasians because of being Catholic. That, added to rural, working class background, made a difference."

3. Are their causal analyses credible given the data?

After explaining their use of the 1980 U.S. Bureau of the Census 5 percent sample, GCB report that "Haoles are better off than Portuguese.... [T]he current relative disadvantage of Portuguese-Americans results less from current discrimination than from the legacy of historical choices they made in the pursuit of acceptance and economic security" (p. 521). The authors use historical sources to describe Haole-Portuguese status contrasts, especially prior to World War II, and suggest a causal chain involving rural residence, low access to education, and restricted occupational choice. We have severe reservations about the nature of those categories both historically and currently. Based on our experience, we have grave doubts about the meaning to be derived from multivariate statistical analysis of the data classified in such categories. For example, the Haole category used by GCB includes all whites in Hawaii (except military personnel) in 1980, no matter how long they have been residents, and the Portuguese category excludes the upwardly mobile who left the islands altogether. Perhaps some analysis could be limited to Haole descendants of those who were in Hawaii at the time of the Portuguese immigration (Nordyke 1977).

If we accept the "rough" categories used by GCB we must then question their causal analysis and macro-sociological generalizations. GCB remark that "[s]cholars generally agree that the Portuguese immigrants were not considered Haoles but agree less on the reason for this.... A variety of causal factors are frequently cited including Portuguese origin in southern Europe, peasant background, poverty, swarthy skins, and introduction as workers, but the actual process is more complex than a simple listing of causal factors would suggest" (p. 517). This is an odd remark coming from these writers. On the one hand, it is their world-system perspective which presumably simplifies our understanding of the phenomenon to be explained. Once we know that Portuguese were from the periphery and needed as laborers on Hawaiian plantations, all is presumably explained.

On the other hand, all of these factors are

causal factors and all must be built into an account of what is a complex actual process (Manicas 1981, 1987). It cannot take the form of what the authors misleadingly call a "causal chain." It is not a causal chain but a collocation. People make history, but they make it by acting with resources at hand, resources that are the legacy of previous activities. There are similar patterns elsewhere because capitalist transformation was a potent causal force in every society on which it impacted. But a potent causal force is not the only causal force. Capitalist relations forced transformation of *everything*—that is the insight of Marx and Engels.

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REPLY TO WEINSTEIN, MANICAS, AND LEON

THE PORTUGUESE AND HAOLES OF HAWAII REVISITED*

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The "Portuguese and Haoles of Hawaii" represents the confluence of two lines of analysis pursued by Geschwender and a series of collaborators over several years. One is the theoretical analysis of race and ethnicity in world-historical context and the second is the historical analysis of racial and ethnic stratification in Hawaii. Any single manuscript is, of necessity, incomplete because it cannot repeat the full line of theoretical reasoning presented elsewhere. "Portuguese and Haoles of Hawaii" did not include the full theoretical analysis of the origin of race and ethnicity that had been presented elsewhere (Geschwender 1978; 1987). The failure of Weinstein, Manicas, and Leon (WML) to understand what we were attempting can perhaps be traced to omissions in our sketchy presentation.

There are at least two important historical

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moments in the origin of race and ethnicity. The first occurred during the expansion of the capitalist system when its European originators first extended operations beyond Europe. It matters little whether this is a result of overproduction, underconsumption, exhaustion of the potential labor supply, or rising costs of production brought about by the increased strength of organized labor. Capitalists sought new markets, raw materials, cheap labor, or some combination thereof. Contacts occurred between peoples differing in a number of respects — not the least of which were physical and cultural characteristics. Differences in technology became translated into differences in military might. The European powers utilized their military might to develop relations that facilitated the extraction of surplus from the Africans, Asians, and Pacific Islanders with whom they came into contact. They also drew upon physical and cultural differences in the development of stereotypes that allowed for the emergence of a racist ideology justifying domination and exploitation. This was not a conscious, manipulative process. However, domination, unequal exchange, exploitation, and racist ideology all emerged at the same time in a mutually reinforcing manner.

This is not a class-reductionist argument. The majority of the dominated nations were class-differentiated by the time of first contact with the West. They did not define themselves in racial or ethnic terms, but the seeds for such a development were laid by their introduction to capitalist exchange relations. Space limitations prohibit a full analysis of these developments, but it is worth noting that ethnic identity is not likely to emerge prior to the development of multi-national states, and that race probably first emerged as a macro-national category distinguishing between colonized and colonizing peoples. England's colonization of Ireland demonstrates that the equation between race and imperialism is not perfect. Then again, the Irish were long thought of by the English as a biologically distinct race.

The second moment comes with migrations of people — usually, but not always, from the periphery to the core. The relation between labor migrations and the origin of ethnicity has to be analyzed in the context of class struggle. People are imported for a number of reasons: to be used as cheap labor, to lower the cost of production by reducing wages for all labor, to undermine the organizing efforts of indigenous labor, and to generally facilitate the control of

labor by capital. Indigenous labor normally recognizes these facts and organizes resistance. Often their resistance takes the form of attacks upon immigrant labor. Stereotypes are formed, hostility generated, and discrimination follows. Stereotypes draw upon attitudes developed during the period of capitalist expansion. The visibility of immigrant groups is heightened by the fact that they tend to migrate in streams, and by their frequent use as strikebreakers. The immigrants, partially for defensive reasons and partially for linguistic or cultural reasons, tend to settle in common areas. The hostility of others tends to encourage the formation of in-group solidarity and a we-they type of thinking.

Taken by itself, this portion of our analysis might appear to be class reductionist since it argues that the combination of shared national origins and homogeneous class location engenders the development of ethnic identity. However, it is not that simple. The Portuguese came to Hawaii from an integrated society in which a sense of national identity had already developed. This facilitated the development of a Portuguese ethnicity in Hawaii. *However, it was the fact the Portuguese were also homogeneous in terms of class that served to distinguish them from Haoles, who occupied a different position in the social organization of production.* The equation between class and ethnicity is normally shortlived and imperfect while it lasts. The immigrant ethnic group is *often* homogeneous in terms of class at the same time that the working class is fragmented by ethnicity. Forces creating internal class-differentiation are often set in motion very shortly after the emergence of ethnic groups in their new locale.

We cannot overemphasize the fact that common national origins do not ensure a shared sense of identity. Not all groups that became ethnic groups previously viewed themselves as a single, united people. Italy was not a unified nation at the time of the major Italian migration to the United States. People identified themselves as Neopolitans, Calabraise, Sicilians, etc.,—not as Italians. Similarly, when workers were first imported from the Philippines to Hawaii, there was no sense of identity as Filipinos. People saw themselves as Ilicano, Visayan, or Tagalog speakers. Subsequent developments, both at region of origin and in the receiving society, helped to shape emergent identities. Even if ethnic labels are the same as ones used before, ethnic identities are always emergent in the new locale, and are not the simple trans-

planting of old-world identities. Once these new ethnic identities are socially defined, they influence future behavior and interaction patterns. Ethnic groups do not remain unchanged, but are created, evolve, become class differentiated, and occasionally die out. The time when class and ethnicity may be equated is relatively brief — but it frequently exists for a fleeting moment.

We do not understand the criticism of our initial discussion of the concepts "Haole" and "Local." It is charged that Portuguese do not fit because they are not Haole despite being Caucasian. This is true, but this is also precisely the research question that we posed. We wished to explain why the Portuguese in Hawaii did not conform to the general pattern. Nor do we understand the charge that we fail to recognize ethnic differences. We have consistently stressed the need for historical specificity in all sociological analysis (see for example, Geschwender and Carroll-Seguín 1988; and forthcoming). The process of ethnic group formation varies between regions, between eras, and even between ethnic groups in the same region at very similar time periods. The Chinese migration to Hawaii was primarily one of plantation labor, but it also included a significant number of merchants. The Chinese community contained the seeds of class differentiation from the beginning. The primarily male nature of the immigration also fostered out-marriage. The Japanese immigration was more homogeneous in terms of class — few non-laborers were included. More women came, especially between 1908 and 1924, facilitating the development of a permanent community with little pressure for out-marriage. They also came to a different Hawaii—one made different by the fact that the Chinese had come earlier. Thus, their subsequent history in Hawaii was different from that of the Chinese.

We cannot fully develop these ideas at this point, but enough has been said to illustrate the need for historical specificity in all social analysis and to reassert that this is precisely what we were doing when we presented our brief discussion of differences between the experiences of Germans and Portuguese in Hawaii. Somehow, WML missed our argument. Perhaps we were unclear. Portuguese were introduced into Hawaii in such a way that they virtually all occupied the same class location. They were segregated from other workers and treated differently. This gave rise to a conception of Portuguese ethnicity

which identified them with agricultural labor, as different from Haoles, and as different from their Asian co-workers. It was only much later that consciousness of similar historical experiences developed to the point that both Asian-American and Portuguese-American identities could be incorporated into the more comprehensive macro-ethnicity of "Local."

It is true, as WML state, that 1400 Germans also came as agricultural workers, but they were preceded by a German capitalist class (Hormann 1989). One of the first merchant houses established in Hawaii was funded with capital out of Bremen and developed into H. Hackfeld and Co. — one of the "Big Five" sugar factors (Geschwender 1982). It also owned and/or operated several plantations. Most of the German laborers imported to Hawaii were brought in by Hackfeld. A German-speaking community was established at Lihue that preserved many of the cultural aspects of northwest Germany and facilitated the development of a German ethnic identity. However, it was impossible to equate a "German identity" with agricultural labor because the German community had been class-differentiated from the beginning, and people in Hawaii had contact with German capitalists long before they were exposed to German workers.

There is also some confusion in the minds of WML concerning the relation between our historical analysis and our use of regression equations with 1980 census data. We may not have described it well, but our intention was to use the historical material to analyze the social construction of ethnicity as a historical process. Then, because we share with WML the belief that ethnicity is constantly changing, and because we had read statements that there was no longer a significant difference between the economic opportunities available to Portuguese-Americans and other Euro-Americans, we evaluated 1980 census data. We compared Haoles and Portuguese within narrowly defined age ranges, within specific residential locations, and found that, as of 1980, Portuguese-Americans were still significantly disadvantaged relative to Haoles. This suggested that ethnic identity, constructed at one point in time, influenced future achievement. This is the point at which we made the statement that was only partially quoted by WML. The complete sentence reads, "These findings suggest that the current relative disadvantage of Portuguese-Americans results less from current discrimination than from the

legacy of historical choices they made in the pursuit of acceptance and economic security" (p. 521).

They fail to recognize that this was a tentative and intermediate conclusion that laid the groundwork for the next analytic stage. We used the historical material as a basis for a hypothesized causal chain that we then tested with regression analysis. The chain is causal in the sense that it assumes that, at any given point in time, decisions regarding the use of available resources are made within situational constraints. These decisions influence future decision-making because of the role they play in defining the limits within which decisions can be made in the new socio-historical circumstances. Our intermediate conclusion was then modified on the basis of the results of our regression analysis. We found indications of labor market discrimination against Portuguese-Americans. Their lower occupational status could not be fully explained by education and residential location. There did not appear to be any wage discrimination as income was consistent with occupational status.

WML correctly note that "Haole" is difficult to operationalize. We included as Haoles all civilians who reported themselves as "White" on the census race question except for those who identified themselves as either Puerto Rican or Portuguese in their response to the first census "ancestry question." Perhaps it would be better to use a more restrictive definition, such as including only those Haoles whose families have been in Hawaii since the turn of the century. This is not possible with census data. However, we have since reanalyzed the data limiting "Haoles" to "White" persons born in Hawaii who do not have any indication of Portuguese, Puerto Rican, or Spanish ancestry.

WML also correctly suggest that our procedures may have missed some upwardly mobile Portuguese-Americans. We cannot recover those who have left Hawaii or those who simply identify themselves as white Americans without specifying ancestry (about 6 percent of all Haoles and 11 percent of Hawaii-born Haoles). However, ethnicity implies social identity and recognition by other group members. We believe that persons of Portuguese ancestry lost by these procedures, if any, are no longer effective members of the Portuguese community in Hawaii. The third category that we might have missed are upwardly mobile offspring of mixed marriages who choose as their primary ancestry

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the nationality of the non-Portuguese parent. We controlled for all of these problems in our reanalysis by classifying as Portuguese-American all "Whites" who indicated any Portuguese ancestry on either of the census ancestry questions.

Our new analysis (tables available upon request) found that mainland-born Haoles are better educated, hold higher status jobs, and have higher incomes than Hawaii-born Haoles. Nevertheless, with one exception, all of the differences that we originally found between Haoles and Portuguese-Americans also distinguish Hawaii-born Haoles from Portuguese-Americans. The only original finding that was not confirmed was the one that initially surprised us. We no longer found any occupational discrimination against Portuguese-Americans. Rather, it appears that it is only mainland-born Haoles that occupy privileged positions in the marketplace — possibly because many come to Hawaii as representatives of mainland capital. Thus, we can repeat our original conclusion that "the current disadvantage of Portuguese-Americans relative to Hawaii-born Haoles is more of a legacy of past circumstances and prior com-

munity decisions than it is a consequence of present discrimination."

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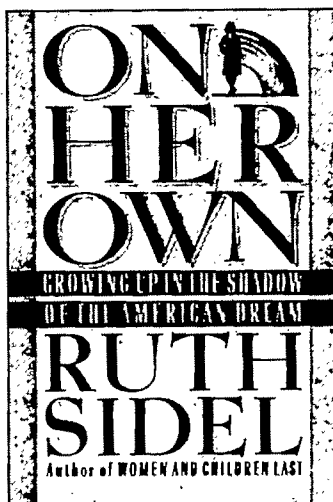
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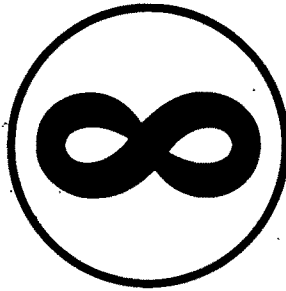
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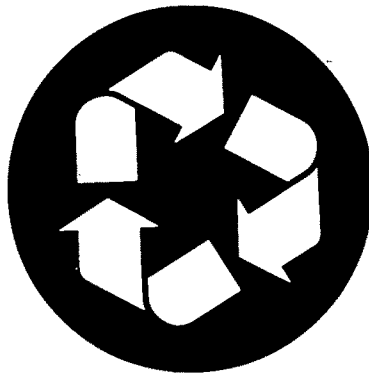
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